

S I N C L A I R

Every month £1.75 May 1990

QL WORLD

CONQUEROR!

The second-generation
PC emulator

SUPERBASIC

Manipulating ascii
characters

ON THE DESK

Desktop publishing
without DTP

SOFTWARE FILE

Home Budget



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Unfortunately, we are no longer able to answer enquiries made by telephone. If you have any comments or difficulties, please write to The Editor, Open Channel, Trouble Shooter, or Psion Solutions. We will do our best to deal with your problem in the magazine, though we cannot guarantee individual replies.

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NEXT MONTH

SOFTWARE FILE: MS-QLINK

A modestly priced file transfer program.

MICRODRIVE EXCHANGE

We hope to introduce a new, improved MDX service.

PC CONQUEROR WITH MS-DOS

PC CONQUEROR

Terrific though we know the QL to be, we do feel the pressure to be "PC compatible" in today's world. There is increasing demand to be able to bring home and run the programs we use at work (or the other way around!), and to have access to the vast storehouse of PC software: word processors, databases, spreadsheets, expert systems, accounts and financial modelling packages, vertical market applications, visualisation aids, graphics/CAD/PCB designers, languages/compiler, operating systems, environments, utilities, adventures - you name it, there are scores of each type readily available for the PC. And thousands of shareware/PD programs too, most for the cost of a blank disk plus postage.

If you buy PC Conqueror, you will be able to run these programs! To boot up PC Conqueror takes 10 seconds from the F1/F2 prompt: thereafter, your QL is a HIGHLY compatible PC clone (indeed, more compatible than some "real" PCs). Conqueror is all-software. There is no comparison in quality between Conqueror and its predecessor: Conqueror has ALL the features of Solution (read the details later in this ad if you are unfamiliar with Solution's legion facilities), but is almost TWICE as fast: this has come about by our careful rewriting and optimising of Solution's code. As if the colossal speedup was not "enough", Conqueror (unlike Solution) runs perfectly even with PC software that makes various "non-legal" calls to the PC operating system. Conqueror runs with virtually anything that will run on a PC: QL Worlds from December 1989 to March 1990 listed several hundred PC programs/utilities found to work with Conqueror. It is simpler to say that we have yet to find a program that runs fine on a standard PC that doesn't run with Conqueror: we are aware, however, of programs that will run with Conqueror but won't run on some PCs!

Because in Conqueror we've cracked the problem of detecting when the PC screen has been changed, we need not slavishly update the screen many times a second (taking precious time away from the main PC-emulation job) as did Solution. Instead, we update the screen instantly it needs to be updated. This simple to understand but very hard to implement modification gives Conqueror additional (over and above what we've already discussed), "tunable" acceleration, as well as absolutely smooth echoing of keyboard input to screen (Solution could be a bit jerky when you typed quickly).

Conqueror's new features include a more flexible configurator and a better diagnostic and supervisor option, an enlarged manual (Conqueror itself is more compact!) with a troubleshooting chart, and a new mode of operation (in addition to the "normal" one of reading/writing PC disks directly) which allows you to create mini PC environments - you select the size, location and name - on any QL device (including floppy, ramdisk, hard disk and even mdv) which look like files from QDOS (and can therefore be copied with SuperBASIC's COPY!) but are indistinguishable from PC drives from within MS-DOS...

If you do not have legal access to a copy of MS-DOS, you need to buy MS-DOS too - but we sell it (with GW-BASIC, Shell and all the system utilities thrown in) at about half the normal price.

Of course QLS are better than PCs - but QLS that are PCs as well are better still. We will leave the last word to people who have already bought Conqueror. All these sentiments are unsolicited.

"I wish to congratulate you on the excellent work you have done on Conqueror. The improvements in performance over Solution are astounding. Well done!" B.C.Papegaij, Netherlands. "I am highly delighted with this new emulator. (Apart from the speed-up) it also appears to be more tolerant." L.Chandler, Peterborough. "Congratulations on bringing such a fast PC emulator into the world - on it, even Wordperfect runs at a reasonable speed." R.Williams, London. "I'm impressed with the improvement in speed over Solution." P.Vervoort, Netherlands. "Thank you for your prompt service. I have Conqueror up and running, and congratulate you on an excellent piece of software." G.Leagas, Hartlepool. "On some benchmarks almost as fast as a PC." P.Johnson, Stoke on Trent. "Conqueror is still a whole lot faster (even) without Lightning than Solution is with the assistance of Lightning." P.Christie, Glasgow, who went on to praise Conqueror for running software Solution couldn't handle. "Conqueror, to which I upgraded from Solution, is a delight to use by comparison!" B.Gouldwell, Dunipace.... V.Pakanen, Finland sums it all up rather well with - simply - "Excellent."

TURBO BASIC COMPILER + TOOLKIT

This state of the art system will automatically convert ordinary SuperBASIC programs - the sort you buy, write yourself or type-in from magazines - into machine code, the language of the 68008 CPU, the brain of the QL. Such pure machine code programs run "directly", without the need to be interpreted by any intermediary system. This direct execution makes them MUCH faster in execution than BASIC. Turbo also adds a host of useful high-speed commands (called "toolkit extensions" if you are fond of jargon). Here are some timings, all carried out on a JS Trumcard QL, to give you a taste of just how much Turbo can improve things:

	Iterations	SuperBASIC	Turbo'd	Speedup
Empty FOR...END FOR Loop	30000	49 sec	1.3 sec	38x
Empty REPEAT Integer Loop	30000	151 sec	2.4 sec	63x
String concatenation	3000	448 sec	0.4 sec	110x
Search through memory	300000	1410 sec	1.5 sec	900x

Turbo's automatic conversion process, called compilation, is as simple as this: (1) Boot up with the Turbo disk (2) Load in or

type in your BASIC program (3) Enter the word CHARGE, and watch the friendly front-end menu pop into view (4) Choose a filename for the machine code task that is to be generated and (5) Press the SPACE bar. Turbo does the rest! Compilation is a one-off process, and is very fast too - it takes little more time than LOADING the original program did! Once compilation is finished, you have a machine code version of the original program. Start this with EXEC, just as you used to invoke the original program with LRUN: besides the tremendous difference in running speed, you will notice that the program loading time is cut down to a few seconds at most (big SuperBASIC programs can take half an hour or more to load). The EXEC mechanism also allows you to multitask programs, something impossible with SuperBASIC, as well as manipulate their time-priorities, link them together, exchange data and even share parts of their code while executing.

If you are an advanced user, Turbo's numerous fine-tuning facilities, 200-command toolkit (a terrific complement to the famous Supertoolkit) and 300+ page manual will be irresistible. If you are a beginner, you will wonder how you ever did without Turbo's program diagnoses and auto-correction.

Turbo is more than a very clever optimising compiler. Turbo is magic. If you do not have it, you can have no conception of the experience you are missing and the power you are forfeiting.

PROFESSIONAL PUBLISHER

(cont'd) cursor keys and SPACE bar, or by pressing a digit key. There is context sensitive, on-screen help too. When you get more experienced with the program, you may select Command mode (using the Enter key) and choose operations directly, bypassing the menu system. PP is more user-friendly than any page-making program we have ever seen on any computer, period.

Let us talk you through how you might choose to produce a page or succession of pages. This is just one way you might proceed: PP does not impose any sequence of steps upon you, and you can omit certain operations altogether. You will have pre-configured PP to boot up with a generous lot of fonts (you select which ones you are likely to want - of course you can load in additional ones, or discard existing ones, at run-time too). You could then set the required page dimensions and orientation, as well as not-necessarily-symmetric margin, grid, gutter, column and navigation-guide positions (yes, half the PP manual is a glossary) - you could have pre-configured PP for these too, or loaded in alternative layouts (layouts are distinct from page contents) you've created in previous sessions. If you don't set layout we'll use the default, or the one used for the previous page. Now you would plan the page in detail. Laying out graphics (if any) comes next - you can create these in PP itself, with its superb rubber-banding, dozens of brushes, palettes, texture-fills and so on. Alternatively, you can load in screens created elsewhere, including Eye-Q, Easel, any other graphics programs or digitiser, into a cut and paste buffer where a dozen tricks (including resizing, slanting, scrolling and texturing) are available, and then take the finished product onto the page. This done, you might insert headlines or captions, selecting from the dozens of fonts available. Each font can be manipulated in billions of ways (yes, we mean thousands of millions): to give but two examples, you have a choice of 32 slopes for italics for the font, and dozens of aspect ratios are selectable. Now you might opt to get the main body or bodies of text down on the page. As fonts are defined to great accuracy (upto 2304 pixels PER CHARACTER!) jaggedness is a thing of the past, and visually the choice of fonts can only be described as stunning! You can do this either by directly typing it into cursor-dragged boxes (with all the options you would expect from a dtp system, and a few more besides), or by loading it in from file created by Quill, Editor or other word-processor. The latter method is the one we prefer (because you retain the text as a character stream rather than as pixels when you save the file). Highlights such as bold, underline etc which you may have inserted into the text are preserved. Indeed, you can control PP's operation from within the text file itself. If you are an advanced user, you can even teach PP your own mnemonics, so that it switches between different styles and modes as it encounters instructions you put into your text file when you created it! The imported text file

is editable within PP. It is up to you to decide where the text is to lie - PP places no restrictions on either the number or the shape of the windows into which the text is to flow: they need not be rectangular, and can have any irregular border, and can even overlap or be contained one inside another! You can freehand-draw (there's excellent rubber-banding to help you) the window borders as you choose, to get any effect you desire, to fill any space you wish and to avoid any existing material already on the page (or to reserve room for new material). Amazingly, within the window the text will all be perfectly micro-justified in the font(s) of your choice, however bent or contorted you made the border. Text will flow automatically from one window to the next either until you have run out of text or out of windows. There are many text formatting facilities: you can select word-wrapped, force-broken or hyphenated, and you can specify minimum numbers of "pre-hyphen" and "post-hyphen" characters so that absurd hyphenations are avoided (if no sensible hyphenation position can be found the word is wrapped instead). There are so many fine-tuning controls here that the rest of this ad could be devoted to describing them and would still leave things out! We will have to content ourselves with but one example: with micro-justification (pixel by pixel spacing, not crude character by character stuff) we even allow you to specify what % of padding space is to be allocated between characters and how much between words! Text work completed, you can then put in the final touches by adding borders, shadows, patterns or designs, overwriting or slipping under or combining these with existing material, repositioning parts of the page if necessary. The end result - be it for a letter, letterhead, document, manual, article, newsletter, magazine, book, thesis, ad - is far better than you have any right to expect from a piece of software costing under £2,500, let alone under £100...

SOLUTION WITH MS-DOS SOLUTION

This program transforms your QL into a pretty compatible - albeit not fast - PC clone. Solution will run over 95% of the "big name" PC software you have read about, missing out only on programs that make illegal use of the PC's operating system. Solution works solely from software so you don't have to worry about ripping your QL to pieces to fit anything, or have anything hanging out of the back. Just boot up the Solution disk and you will be using a PC, which will then ask for a copy of MS-DOS (just as it would if you were using a "real" PC). End of story - you are now using a PC. There are very few restrictions: both mono and colour CGA graphics are supported. 479K is available for PC software on a 640K machine and 667K when using Trumpcard - more than you will get on a PC or XT! Speed can be increased by using Lightning Special Edition and/or Minerva (but just can't compare with Conqueror's speed). Because your newly acquired PC is really a QL you can multitask two or three PC programs (try doing that on a "real" PC!). You can also run QL programs alongside PC programs (DON'T try that on a "real" PC!). Converting files (in either direction) between QL and MS-DOS is no problem and you can re-configure the QL keyboard if you wish.

PROFESSIONAL ASTROLOGER PROFESSIONAL ASTRONOMER

Our use of the term "Professional" in the name of an application program does mean that the quality achieved will meet or surpass the highest professional standards for that application. The term does NOT mean that you have to have the knowledge of a professional in order to get the best out of the programs. Astrologer teaches you astrology from scratch, and enables you to produce reams (if you are short of paper, you can choose exactly how much) of narrative printout giving a person's horoscope, personality delineation, year-to-year life overview, detailed day-to-day (in fact, minute-to-minute!) predictions, as well as two-person compatibility interpretations. Also provides all the technical readouts, charts and zodiacal wheels you would expect. It is extraordinarily fast (there is a great deal of very clever maths within it) and it performs the whole computation in under a second. The author of the manual is the author of this advert, so you can expect a lucid and humorous read! Whether or not you believe in astrology - indeed, especially if you do not - this program is one that you cannot afford not to have. Scores of detailed readouts for famous people are supplied, incidentally - very interesting reading they make too... Discover Mrs Thatcher's secret yearnings, explore yourself, play the Stock Exchange... Astronomer is an extremely efficient solar system computer, with planetarium views, planet faces (with shadows/eclipses), five different co-ordinate systems, 1sec-1day cinerama, etc. Astrologer + Astronomer is supplied at a very low combined price.

LIGHTNING SPECIAL EDITION LIGHTNING

Until the autumn of 1989 the fastest way of speeding up your QL display was to buy Lightning, which greatly accelerated QL text printing, graphics and maths, without affecting compatibility at all. NOW you can buy Lightning Special Edition, which is significantly faster than Lightning and does a lot more! Lightning Special Edition is simplicity itself to use. Once it is loaded ALL programs will AUTOMATICALLY benefit from the

enhancements it provides. If you are using a QL without Lightning you are probably a little pale (quote from John Norton of Sector Software), you should get out and about more... Go to some QL shows or meetings where you will see Lightning in action - or take our word for it. If you don't have Lightning you are WRONG. Lightning Special Edition works by automatically (I know we keep using the word, but it is the only one that is really correct here) and instantly replacing QL ROM code (or Minerva code, for that matter - Minerva and Lightning complement each other superbly) that has usually been optimised for space, with extremely high speed routines written by us that do the same job but much faster. Screen output speed gets accelerated by factors from over 1.5x to over 10x (about 2x-4x is representative), graphics are drawn twice as fast (points are plotted 5 times faster) and internal maths is speeded up by 2x-5x (you can even vary the precision). There is virtually no cost in RAM (for example, you can still run Quill with a fairly large document on an unexpanded QL with Lightning Special Edition). The Special Edition is supplied on EPROM plus disk/cartridge: if you already have something precious plugged into the QL's EPROM socket (at the rear), there is no problem - all the EPROM's functionality is duplicated on the other medium! Lightning Special Edition provides more than acceleration - you can dynamically adjust channel parameters - like ink, paper, font, screen position, use over 80 fonts, a null device, a character drain and all sorts of other interesting gadgets. Lightning Special Edition installation has been totally automated, and will not present you with complications no matter how computer-naive you are.

If you cannot afford the Special Edition, get Lightning. Refer to its review in September 1988 QL World to see how effectively Lightning acquitted itself.

Both of these programs transform the QL into an altogether more zippy, business-like, efficient, enjoyable machine.

DIGITAL C SPECIAL EDITION DIGITAL C COMPILER

Superb C compilers these - fast in execution, they produce extremely speedy and concise code. No-nonsense documentation is included. The Special Edition has many more features, including pointers, long pointers, structures, >64K code sizes, direct access to traps and vectored utilities, and is twice as fast because of its more efficient C/QDOS libraries.

ACT SPECIAL EDITION

The Adventure Creation Tool is for every programmer or putative programmer. Whether or not you have any interest in adventures, you will find something useful here. Animated graphics, data compression, language design and parsing, maps, object-oriented control and much more, with an excellent educational manual too.

3-D PRECISION CAD SYSTEM

2-D and 3-D design and manipulation, at a speed sufficient to permit real-time animation! Whether or not your interest is serious, 3DP will change the way you look at the world around us. The variation of viewpoint, perspective and magnification is very smooth. In addition to dot-matrix output, plotters are catered for.

SUCCESS CP/M EMULATOR

Run CP/M programs on your QL! What more is there to say, other than that after the PC family, no more common system exists than CP/M, with thousand of cheap programs... And Success is fast!

THE EDITOR SPECIAL EDITION THE EDITOR

Not just a word processor - more a way of life. The Editor Special Edition (SE) is a powerful data management tool, whose simple-to-master user interface was the result of months of careful design. Absolute consistency of control and operation is its hallmark. To illustrate this, ALL Editor commands have exactly the same structure - verb, followed by a separator (any one of your choice) and one or more optional nouns (if more than one, separated by the same separator). For example, W stands for Write, so W/FLP1 letter will write the current document to a file on flp1 called letter. Simple! Because Editor - unlike its imitators - is device independent, if you wanted to print the document you would enter W/SER1 (or whatever) and if you wanted to scroll it on the SuperBASIC screen you would use W/SCR - the same verb (W) each time. Note that the document needn't be text only - Editor can handle non-ASCII code, data files - even Archive or Flashback files direct - programs, _doc files, files imported from other computers, machine code etc. If you wanted to write only part of the document, you would first define a block using the verbs BS and BE (Block Start & Block End) with your cursor in the appropriate positions. You don't have to define the Start first, and you are not locked into any sub-menu system once you have defined one end of the block - you can interpose any number of other operations between the two definitions. Blocks needn't be in chunks of lines - columnar (making multicolumn work as easy as pie) - or character-to-character blocks are also allowed, Block Type being set with BT. Once the block is defined (you can choose whether or not it appears highlighted using BH)

DIGITAL PRECISION

you would use BW instead of W to write the block to the desired destination. Yes, you guessed, Block commands all begin with a 'B' - the other ones are BD, BM and BI (Delete, Move, Insert). As you've also guessed, cursor navigation with Editor is stunningly quick. Not only is there immediate (<0.04 sec) random access to any point in the document, but even line-by-line scrolling can be at rates of hundreds of lines per second. There is lazy screen handling, so as soon as you show impatience by tapping a key while Editor is doing something, Editor will reduce - and if you persist, suspend - screen updating to devote more resources to the job in hand. To go on: say you wanted to Exchange the first hundred occurrences of "or" to "/". The way to do this would be 100E.or./ - note that / would not be a sensible choice of separator as one of the nouns contained a '/', so we used '.' instead. Let us say you wanted to Find (searching Backwards from the current cursor position) the last occurrence of 'and': you could use FB.and. If you wished to Repeatedly exchange the 'and's for ampersands, you could use RP EB/and/& but this might be dangerous if you wanted to avoid words like thous&s! To get around this you could append a qualifier Q (query before doing anything) after the E (so the backwards exchange was EBQ or EQB). Better still, you could specify that the exchange target must be a Word (we've provided a sensible definition of a word, but you can modify this if you wish with the configurator) - RP EBW/and/& would accomplish this. Editor SE has 200+ commands but as you can see they are logical and consistent and hence very easy to learn. We would not dream of using anything but Editor for text input - all our manuals are written on Editor (when we've had the time, we've ported the output through Professional Publisher for super print quality). We will not bore you with a list of Editor's capabilities - whatever the job, whatever the printer, Editor can do it. Such are Editor's speeds of searching, moving, sorting and manipulating information that we use it as a card-index type database and a programming tool - we've never seen fax so quick! The advanced user may note that Editor's commands can themselves be stored in ASCII files and later executed, just like programs. So powerful is Editor, the first version of a high-level language translator from another reputable QL software producer was actually written as an Editor SE command file... The SE version is the ultimate one (especially if your principal aim is word processing rather than other data handling): the standard version contains as many features as we could get to fit into an unexpanded QL. Both are extraordinarily fast. More than a word processor, Editor's a way of life.

MEDIA MANAGER SPECIAL EDITION

MEDIA MANAGER

MMSE is a joy to use. Whether something has gone wrong with a disk or tape ("Not found", "Not a valid Quill file", "Bad or changed medium", "Read/write failed" etc) or whether you want better control over your programs and data, MMSE should be to hand. Virtually any calamity can be recovered from automatically: all permutations (accidental deletion or part-overwriting, part-formatting, errors yielding: bad map but OK directory, bad directory but OK map, bad map and directory, OK map and directory but bad file sectors, unknown fault, power glitch corruption and so on) have been carefully thought through and catered for. If nothing is wrong, but you just want to explore and understand more about your system, you can potter to your heart's content, assisted by the clear and packed-with-facts manual. Dozens of different diagnostic printouts can be produced. The whole system is menu-driven, with context-sensitive, on-screen help for every option. The speedy Sector Editor is a positive delight: the collector file facilities, bulk recovery, auto-navigation, skipping through the medium in physical, file (if map), logical (if no map) or uncollected/logical (if destroyed map, and because of "chequered" history with lots of overwriting/deletions no one-step recovery available) sequences must all be experienced to be believed. MMSE is extremely simple to operate, and assumes no advance knowledge whatsoever. Alternatively, if you wish to tidy up your disks or cartridges, MMSE allows you to change volume format names, sort directories into alphabetic, date or size order, analyse file contents and histories, change case of filenames, move data/programs to/from alien-format disks, introduce or break copy-protection systems (illegal use prohibited!), MMSE can and will deliver the goods. It is absolutely superb. The standard Media Manager is much less powerful, and less easy to use. It is for those on a tight budget.

SPECIAL DESKTOP PUBLISHER

DESKTOP PUBLISHER

Both these WYSIWYG ("What You See Is What You Get") dtp systems are excellent in their own rights - it is only when you compare them with the stunning Professional Publisher that you become aware of their shortcomings. You won't get fonts as large or smooth as with PP, or wrap-around graphics, or as sophisticated a printer driver or text/graphics file import facility. You will get a very workmanlike tool, capable of producing output that the computer press described as fantastic and superb... The standard edition is the ideal if you do not have a disk drive: if you do have one, go for the Special version, which correspondingly has more features including textures, large windows, better drawing and improved command entry. All upgrades are possible, and there is only a £10 penalty for doing it in two

stages. So if you simply cannot afford PP, one of this pair is certainly for you.

SUPERFORTH COMPILER WITH REVERSE

Why not learn FORTH, the most logical computer language of all? This superb FORTH-83 compiler produces stand-alone multi-tasking code of speed comparable to C. SUPERFORTH source is even portable to other machines! The manual teaches you the language.

IDIS SPECIAL EDITION

IDIS

Machine code (from other people's programs, toolkits and the ROM) is unintelligible until you put it through IDIS, the intelligent disassembler. IDIS Special Edition automates everything it possibly can, and requires no human intervention. It even sorts out subroutines, replaces addresses with names, untangles data from code and so on. Standard IDIS contains as much as we could pack into an unexpanded machine, and is nearly as automatic. If you want to find out how computers work, buy one of these two!

MICROBRIDGE

Never be short of a 4 for Bridge again. Superb tutor included, based on random hands dealt with lightning speed.

EYE-Q

There is no way to describe Eye-Q except as the best graphics program for the QL. This master is now four years old, and we have never felt the need to change anything. Its use is characterised by absolute simplicity, speed and power - it has that indefinable precision "feel" that is just right. All the expected manipulations are provided. Whether your needs are technical drawing, labelling, design, illustration, freehand work, copying - or just having fun, Eye-Q will not disappoint. Of course it is menu driven with context-sensitive help. The system takes 5 minutes to master. The variable zoom and fill facilities, anti-fingerslip measures, cursor acceleration and so on make Eye-Q a classic in its own time.

SUPERCHARGE SPECIAL EDITION

If you have an unexpanded QL, or cannot afford Turbo, but want SuperBASIC programs to go faster, Supercharge is the answer. It has about half the speed of its big brother, is not as tolerant of badly-written programs, and lacks many of Turbo's features (like linking, program sizes >64K etc): nonetheless, it is the compiler about which we received over ONE HUNDRED happy letters from satisfied users all using the word "Excellent" to describe it - and hundreds more who used other equally complimentary terms. The only gripe was about the Lenslok copy-protection, long since removed by us. So now Supercharge is perfect!

SUPER SPRITE GENERATOR

SSG moves things about the screen rapidly, at machine code speed, directly from simple SuperBASIC. 256 sprites (each with upto 16 frames for realistic motion), 256 speeds, 256 planes, collision detection and dozens of special effects. SSG is very Easy to use.

SUPER ASTROLOGER

A cut-down version of the Professional Astrologer - smaller horoscopes and manual, no interpretations for forecasting or compatibility testing. Still a marvellous buy at the price!

BETTER BASIC EXPERT SYSTEM

SuperBASIC is a super BASIC. If you want to improve your programs automatically, and learn as you do this, get Better Basic.

FONT ENLARGER

For Professional Publishers users - loads of large fonts are automatically created by this multitasking utility, as and when you need them (or in advance), by enlarging existing smaller fonts from PP itself, Lightning Special Edition and hordes of other sources. The difference is there is NO jaggedness at all.

ULTRAPRINT

To get the best printer output from Eye-Q or any other graphics program from any other source, Ultraprint delivers. An amazing 22 styles to choose from: enhance contrast (for line output) or gradation (for pictures) and vary magnification... A printer without Ultraprint is no printer at all.

MONITOR

Check dynamic operation of programs - IDIS's ideal companion.

TRANSFER UTILITY

Copies files between devices, performing translates as it goes. Needs a ramdisk to run. Move your microdrive material onto disk, so it runs from disk but you still have access to microdrives.

No:	Program Title	Price £	Key
(1)	PC CONQUEROR WITH MS-DOS	139.95	eT
(2)	TURBO BASIC COMPILER + TOOLKIT	99.95	aT
(3)	PC CONQUEROR	89.95	eT
(4)	PROFESSIONAL PUBLISHER	89.95	cT
(5)	THE SOLUTION WITH MS-DOS	89.95	eT
(6)	PROFESSIONAL ASTROLOGER WITH ASTRONOMER	69.95	aT
(7)	PROFESSIONAL ASTROLOGER	59.95	aT
(8)	LIGHTNING SPECIAL EDITION	49.95	+aT
(9)	DIGITAL C SPECIAL EDITION	49.95	aT
(10)	MEDIA MANAGER SPECIAL EDITION	49.95	dT
(11)	ACT SPECIAL EDITION	49.95	eT
(12)	3-D PRECISION CAD SYSTEM	49.95	dT
(13)	SUCCESS CP/M EMULATOR	49.95	HT
(14)	THE EDITOR SPECIAL EDITION	49.95	dT
(15)	SPECIAL DESKTOP PUBLISHER	39.95	ct
(16)	THE SOLUTION	39.95	eT
(17)	SUPERFORTH COMPILER WITH REVERSI	39.95	aT
(18)	IDIS SPECIAL EDITION	34.95	dT
(19)	MICROBRIDGE	34.95	d
(20)	EYE-Q FOR GIGAMOUSE/GRAM/THOR	34.95	aT
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TERMS AND CONDITIONS>

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 * Our programs are all user-transferable between cartridge and disk, are all free from ALL copy protection, and all work with all drives, toolkits, RAM add-ons and disk interfaces (except for programs 1/3/5/10/16/29 which object to the sector-handling by some versions of the MCS interface). Users of the Microperipherals interface are recommended to buy the Q/LP ROM upgrade from Care Electronics or QJump. ST/QL Emulator owners will benefit from a c2.7x speed increase on all our products.
 * If you want Eye-Q, but want to use it with a Giganouse, with GRAM or on a THOR, order (20) and specify your intended use.
 * Microcartridge users please note: don't panic! we have large stocks of microcartridges and we are NOT going to run out. Quality software on cartridge will continue to be available from us for the foreseeable future. You can buy cartridges from us at the rate of £19.95 for a set of five cartridges.
 * Digital Precision (abbreviated by our admirers to DP!) is a trading name of DIGITAL PRECISION LIMITED, Company Registration Number 1833989, registered in England and Wales.

SUPER INCENTIVES

We are currently reviewing our mailing list to ensure that we can mail out information to ALL QL owners from time to time. If you have never contacted us giving your address, or have contacted us in the past but have since moved, we would be grateful if you could post or phone us your name and address (even if you have no order to place at the moment). Thank you for your co-operation.
 As an incentive, we will include your details in a completely free special PRIZE DRAW which will take place on each of the first four Saturdays after the release of the May 1989 QLW. Four weeks gives even foreign users - who are, of course, most welcome - plenty of time. The sooner you register with us, the better - your details will be left in the draw system, so if you register right away, you will get four chances to win a prize (or prizes)! Prizes comprise thirty items of non-Digital Precision QL software and hardware, and CDs, tapes and VHS videos - total worth well over a thousand pounds. Winners will be sent their prizes automatically within a week of each draw.
 As an even greater incentive, if you have never ordered from us before, buy Supercharge and/or Standard Editor for only £14.95 each - half the normal prices (or Turbo for £39.95 and/or Special Editor for £39.95). Also, you may buy other programs at the same time and then benefit from the combined deal prices also!

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OPEN CHANNEL

Open Channel is where you have the opportunity to voice your opinions in *Sinclair QL World*. Whether you want to ask for help with a technical problem, provide somebody

with the answer, or just sound off about something which bothers you, write to: Open Channel, Sinclair QL World, 116/120 Goswell Road, London EC1V 7QD.

Columns

I know the problems Bryan Davies describes in the first Fancy Stuff article in the December, 1989 *QL World*. It can drive you hairless trying to match columns of text or getting a suitable text position on the page with variable sizes of text.

The main problem is that when you alter print sizes at the printer end it will not correspond to the screen image. Enlarged, Elite or condensed print will all start at a different position on the hard copy when compared to the screen position. Here is one possible solution to reduce – not necessarily

eliminate – the numbers of printed copies produced to achieve the desired results. First, set up the page design you want to use – lines per page, page depth, and so on. Set the page margins to an A4 page size. I use:

Pica: L=10, I=1-, R=70.
Elite: L=10, I=10, R=90.
Condensed: L=5, I=5, R=5.
Enlarged Pica: L=5, I=5, R=40.

Starting at the first cursor position, reproduce the prompt line at the top of the screen. Your first line should read:

1.....2.....3.....4.....5.....6.....7

depending on your left and right margin settings.

The second line should be identical but should contain no numbers. Now do a copy command for the second line only three times, giving five lines altogether. Now do a copy command for all five lines, until you have a screen full representing a pageful – 60 lines.

Go back and re-number each line. When two-figure lines are needed you will have to delete one full-stop to balance the line again. Put your A4 sheet into the printer at its normal starting position and print the page at the specified print size.

Go to a high street print shop and have it photocopy the page on to a clear acetate overhead transparency sheet. You now have a transparent overlay which you can use to calculate the desired screen position of the text easily to achieve the required page position of the print.

I also find this useful when I want to leave a blank box area surrounded by text at a specific position on the page into which I can fit a drawing or photograph later.

I enclose a sample acetate sheet. If any reader has difficulty in obtaining them I might be able to help. I also have a request. Can any knowledgeable reader let me know if it is

Editor's notebook

April Fool! We're back again, this time with a new office, a new address, a new subscription department, and a new publisher.

What has actually taken place since we realised that the April issue of *QL World* would be considerably later than planned is this: Focus Magazines Ltd, has, with other parts of the Focus group, been under administrative receivership, and *Sinclair QL World*, along with various sister magazines, has been acquired by a new owner.

During this time we have continued to operate with as little disruption as possible to our normal services; which is not to say there has been no disruption. Three weeks late in April was a bit of a disruption; the Microdrive Exchange is being reorganised with a view to providing programs on disk as well as mdv; my telephone is in a crate, and Simon is taking a well-earned Sabbatical – we continue to pray for him, so please don't stop writing.

Our new address is: *Sinclair QL World, MCM Ltd., Panini House, 116-120 Goswell Road, London EC1.*

Please excuse me. I have a skip to pack.

COLUMN GULL PAGE DESIGN.

1.....2.....3.....45.....6.....7.....
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58.....

possible to convert a Siemens ink-jet printer so that it will print on to photocopying paper?

Dennis O'Conner,
16 Parsons Way,
Wootton Bassett,
Swindon,
Wilts SN4 8DA.

Graphics

I have a JM ROM QL, Serial 8056, Miracle Trump Card and a twin disc drive. I have only recently realised, when reading your magazine, that the Serial 8056 will brprint graphs from Easel but I cannot make it do so. Would you tell me what to do? I read the answer on page 15 of the November, 1989 issue but do not fully understand the details of the switches and pins, nor can I load the Gprint_prt program, which I believe has to be altered. My recently-purchased, updated Psion Easel V2.35 includes 'ser8056_dat', but this does not seem to help.

C.J.W. Kindell,
Lewes, E. Sussex

Dennis Briggs answers: The way to get your 8056 to print graphs is to use the install_bas which arrives with Easel. When it is run it picks up the 'ser8056_dat' file and uses it for you to follow the prompts and then create a file called GPRINT_PRT.

If you COPY mdv2_GPRINT_PRT to SCR, that is copy the file to the screen, you should see 'ser8056' as the first few characters followed by what appears to be rubbish which in fact is the code to tell the printer what to do.

Assuming you have this file, or have created it with install_bas, your copy of Easel will look for it on Microdrive I and away you go.

It is possible that Easel needs the printer file installing before it works. When the PRINT option is entered you will see I for install. Press I and follow the prompts, then hit P for the print output.

If your Easel has just been copied across the Microdrive to disc it still looks to the Microdrives for data and so on, but if it has been transferred with Convert, every occurrence of 'mdv' is changed to 'flp' and

everything runs from disc. I suspect that has not been done and Easel cannot find the driver code, so it sends rubbish to the printer.

Convert is free to Quanta members as it is part of the group library.

Instructions

Recently at a Micro Fair I bought a Micro Peripherals disc interface together with a 5.25in. disc drive and power supply. The set-up failed to work other than by spinning the drive on start-up. The disc drive has been checked independently and works well on other equipment.

As the disc interface was without an instruction book I am unable to check much further. I therefore need an instruction book. I rang Micro Peripherals at Accrington and it no longer had any books available. Have you any advice on obtaining the book or suggestions for making the computer talk to the drive?

R.N. Brookes,
334, East Lancashire Road,
Swinton,
Salford,
Manchester M27 3LJ.

Editor's comment: To start, we can treat this letter as an appeal for help. Somebody may have a spare manual or a copy. If you are really stuck with a disc drive, some of the QL dealers can sometimes offer basic advice by telephone. Adman Services has a good reputation for dealing with disc drives and TF Services has a good technical record. They may recommend that you buy your next batch of hardware from a company which can offer support, like themselves.

Overseas

Until February, 1988 at least, QL World arrived eventually in shops and hotel lobbies and was often bought by the uninitiated before I got my copy. What are you doing about that for the countries where magazine subscriptions last no longer than the confiscation of the incoming envelopes?

During the week when my QL was travelling to the U.K.

and back for repair I borrowed one in dire need of a new membrane from an engineer in the Jordan Ministry of Works. Luckily I keep a spare membrane, so my friend was delighted to find his otherwise abandoned QL resuscitated.

There is possibly now no contact with the many QL owners in Jordan or other countries who are short of cash, unless by unlikely chance contact with pilgrims like me. There are many opportunities for all kinds of QL dealers, if they can get near the customers and perhaps trade in Palastinian wine or potash, for those hundreds of moribund QLs stacked unsold in U.K. store-rooms.

Jordan sucks in tourists the way a Hoover collects dust, so see if you can sell something in the Holiday Inn in Aqaba, or the Hotel in Petra, which is run by we British. The country abounds with other people's over-brained computers at astronomic prices.

There are also plenty of clever heads and fingers to service and repair. They do not need to send for the 'white man' if an IBM or a Boeing breaks down. A huge percentage of the population is familiar with computers through the excellent education system. Last year the British handed over some of our systems for introduction by the British Council. Many young people are high in hopes and low in pocket. They need the low-cost excellence of the QL.

Roy Myers,
East Lothian.

Spellbound

Users of the Thor may have discovered that one can use Spellbound with the Psion Xchange package, rather than revert to Quill, as written for the QL. To do this, one enters from SUPERBasic:

```
Poke sys_vars+133.-1,
```

as indicated in the Spellbound instructions and then boots Spellbound from flp1_. Then one loads the dictionary. When the dictionary has been loaded the screen asks one to place a disc in flp1_, containing the program to be loaded and to press any key. At this point, I use a simple boot program,

loaded on any convenient floppy disc, as follows:

```
PROG_USE win1  
DATA_USE win1  
EX win1_XCHANGE
```

When Xchange is loaded, a flashing cursor appears in the lower left-hand corner of the screen. One should then press the Sys Req button twice. The flashing cursor disappears on the first press but a second press is required to get Xchange working.

It is interesting that Spellbound works with all the four programs in Xchange, although its usefulness is circumscribed for those other than Quill. If one multi-tasks back to Basic with the Sys Req control the Xchange screen does not disappear, although the flashing cursor comes up and Basic can be addressed. No doubt your experts will know the reason.

Once one has become used to the speed and capacity of a Winchester drive floppies seem like Microdrives do to a floppy user, albeit much more reliable. Most programs written for the QL and Thor which are available on disc are prepared for the floppy user and even those which can be copied for back-up purposes to not appear to be loadable on to the Winchester, or at least no guidance is given to the profane user such as myself as to how to do this.

If the Thor and any other future QL clones are to develop as serious business machines, Winchesters will be a necessity, as a 20MB Winchester and one or two floppies is virtually the norm today for office machines running well-developed, modern software. It is therefore to be hoped that those writing for QLs and Thors bear this in mind.

F. Gutteridge,
Corsier,
Switzerland.

Editor's comment: Certainly hard discs have become more and more common in a very short period, even by normal computing standards. So fast has the technology developed that the Winchester disc, the standard hard disc to industry for more than a decade, is almost unknown to new, home- or small-office-based hard disc users.

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SOFTWARE

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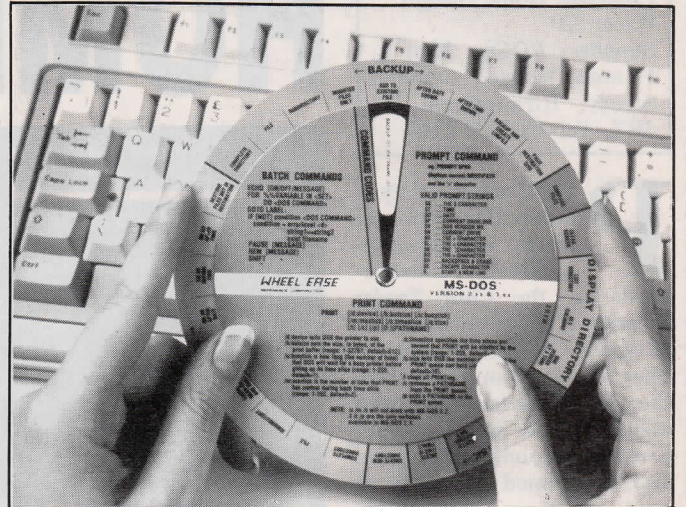
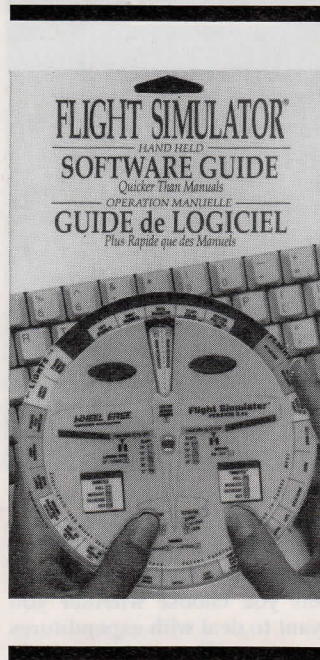
FAX
0303 812892

QL SCENE

Little wheels for PC programs

"It's the Wheel Thing", says Mirrosoft, announcing its newest aid to pain-free computing. The *Wheel East Software Reference Guides* are, unfortunately, not aimed at QL users but at the ubiquitous PC. Users of MS-DOS programs on an emulator, however, may find them worth investigating.

The Wheel East quick-reference wheels are designed to be a more convenient and portable version of the ready-reference cards published for some popular semi-professional programs. The double-sided Wheel is a freely-rotating card disc with a window cut in each face, mounted over a circular fact-card printed as an 'index' of common processes. The window can be rotated to face the



process about which the user has a query and will then reveal the sequence of operations needed to carry out the process.

To take a simple example, on the *Flight Simulator V3* wheel, the perimeter entry Flight Instrument/Altimeter reveals '[A] (Repeat to adjust)'

when the window is turned to it.

Programs for which a Wheel Ease guide is available include MS-DOS, *WordPerfect*, *Lotus 1-2-3*, *Wordstar* and *Multimate*. The guides, which are approximately 6in in diameter, cost £9.99 each from computer shops and suppliers.

MAJOR MINERVA

News has reached *QL World* that QView has made a major breakthrough in its development of Qdos and SuperBasic which will allow more than one interpreted SuperBasic program to run simultaneously. The changes are due to be incorporated in a forthcoming release of the Minerva Eprom designed to replace the original QL's original operating system roms. As yet the re-writes need to be debugged and tested but QView spokesman Stuart McKnight predicts confidently that *Minerva* Version 2 will be available soon.

The Minerva upgrade removes several known bugs in Qdos and SuperBasic and greatly improves the facilities offered by SuperBasic. Among

other features, WHEN ERROR is fully supported, integer arithmetic and string handling are accelerated, loop identifiers can be of any variable type and screen graphics are extended and accelerated.

Non-programmers benefit from fitting the Minerva Eproms because memory testing is faster, a warm re-set is available and the rapid new maths and graphics routines are used automatically by most existing software packages. The effect is analogous to installing a turbocharger under the bonnet of a car.

The low-key Minerva launch ensured that demand did not swamp supply. More than 400 hand-built Minerva units have now been sold. QView oper-

ates a generous no-quibble, money-back policy and offers a free upgrade to be taken at a time of the customer's choosing. McKnight believes that as the number of Minerva owners increases it might be necessary to modify those arrangements but the QView promise not to bank money until the product leaves the premises will continue.

The ability to multi-task SuperBasic programs has arisen as a side-effect of more flexible Minerva use of the Qdos pointers which keep track of the location of the system tables. The feature is specially useful for implementing small utility routines which would become too bulky if they were to be compiled. Com-

munications between multi-tasking Basic programs have yet to be finalised by Johnathon Oakley, who is responsible for much of the Minerva design.

New Minervas are soon to be accompanied by properly-printed documentation rather than by the text files at present forwarded on disc or Microdrive. Customers will still be required to send a disc or Microdrive containing an image of the QL roms. The version of Minerva being shipped, without the multi-tasking interpreter, is likely to continue to appeal to QL owners who do not program in Basic, especially as Minerva Version 2 is likely to cost more than Version 1. QView can be contacted at **29 Carnaby Close, Godmanchester, Cambridgeshire, (tel: 0480 412884)**. The current release of Minerva costs £30, or £25 to Quanta members.

SOFTWARE FILE

HOME BUDGET

Information:

Program: Home Budget

Price: £20

Supplier: PDQL, Unit 1, Heaton House, Camden Street, Birmingham B1 3BZ. Tel: 021 200 2313.

PDQL sells a variety of accounting packages which are developments of, or enhancements to, the *Cash Trader* program. They cover the needs of typical QL-using businesses. They are rather in the overkill category for the individual who wishes to do some simple, personal accounting; they are also not aimed primarily at giving guidance on monthly budgeting or tax liabilities.

Home Budget sets out to help the individual organise his monthly allocation of funds, based on the likely levels of expenditure. As a forecasting process, it relies on the input of reasonably accurate historical data; you need to let the program know what has been spent in the past on regular purchases such as gas, electricity, telephone, rates, holidays. It also makes calculations on liability for income tax and capital gains tax; the figures are based on income data the user enters and on current tax rates.

The program will run on an unexpanded QL. A printer is considered as being almost essential, hard copy reports being necessary in various categories. No SuperBasic extensions are supplied, or necessary, to run the program. The program code was compiled with *QLiberator* and the memory used is typically 70KB.

Accountancy is a practice which frightens many ordinary folk. It is laced with apparently mystical usages and formalities. It may be desirable for the average person to steer clear of accounting and leave it to trained people, but there is nothing particularly complicated about entering sufficient data to work out a monthly budget or to estimate tax liability. You need to be acquainted with some of the tax laws; at

```
"J_BILLS" MENU:-
Fri, 20 Feb 1990

1. VIEW/PRINT EXISTING ACCOUNTS
2. ADD ENTRIES
3. VIEW/PRINT LAST ENTRIES & BALANCES
4. ADD A NEW ACCOUNT
5. START NEW ACCOUNTS (ERASES ALL DATA)
6. SAVE DATA FILE
7. LOAD DATA FILE
8. CHANGE ENTRIES
9. SHOW BUDGETED COST, BY A/C
10. ACCOUNTS FULL (16 LINES)
11. QUIT PROGRAM

YOU HAVE 0 ACCOUNTS OF 0 LINES. TOTAL BALANCE= £0
MAXIMUM NUMBER OF ACCOUNTS ALLOWED=10
H.B. SCREEN IS CHANNEL No.1, PRINTER No.5
FREE MEMORY LEFT=304352 MEMOR. USED=63466

USE UP/DOWN ARROW KEYS TO SELECT OPTION, THEN PRESS "ENTER".
```

the simplest level you have to know the current rates of income tax.

The program has information on such matters built into it, sufficient for the 1989/90 tax year; you can enter new figures to allow for changes made in subsequent years. PDQL states that "no deep knowledge of computing or accountancy is required."

The program loads and starts quickly. There follows a series of questions which have to be answered each time you run the program — a rather unnecessary procedure consid-

ering that data like the printer port, program device and so on normally are unchanged once set initially. The opening menu lets you choose whether you want to deal with expenditures or taxes. The main expenditures menu — the illustration headed "J_BILLS" MENU:— has 11 options: the expected Load, Save and Quit, seven concerned with viewing existing accounts data, starting new accounts, or adding data to existing accounts, and the remaining one leading to a display of budgeted costs by account.

MONTH	DESCRIPTION	PAYMENTS £	BALANCE £	
MAY 89	928 U @ 5.5p	53.79	36.21	1 ELECTRICITY
		0.00	150.00	2 BRITISH GAS
	QUARTERLY PAYMENT	450.00	0.00	3 LEEDS; MORTGAGE
		0.00	150.00	4 HOLIDAYS
			396.21	CHECK=396.21
	REQUIRED FOR FUTURE BILLS	£336.21		
	ACTUAL IN "BILLS" A/C	£100		
	IN OTHER SAVINGS FOR "BILLS"	£50		
	TOTAL AVAILABLE FOR "BILLS"	£150		
	PAY IN THIS MONTH	£196.21		

PRESS ANY KEY

Bryan Davies balances his view of an in-between program.

When you load a data file you are warned clearly that, if the specified file does not exist, the program will crash. That is perhaps a disadvantage of not using a file of SuperBasic extensions, because there are certainly ways of avoiding such crashes. A demonstration monthly data file is supplied and it gives the new user a feel for how entries should be made.

Each major expenditure category is given an "Account". The bills for gas are all put in one Account, those for rates in another, and so on. An unexpanded QL will have space for 10 — possibly more — accounts.

The default number of Accounts is 10 but that number can be increased later, memory permitting. Based on the known payments for bills in each Account, a required monthly expenditure figure is calculated for the future. A "dedicated savings fund" should be set up by the user and the calculated expenditures are summed and compared to the balance in this to see if you will be able to pay your bills.

When you open a new set of Accounts you are asked first to enter the amount spent annually in each expenditure category. A nominal monthly savings requirement is displayed for each account as the details are entered. You also enter the balance of your savings account for each category: the default is £0, which is suitable for most of us. A "free

memory" figure is shown on the screen to give a guide how far you can go, for instance in adding new Accounts — about 2.5KB for each.

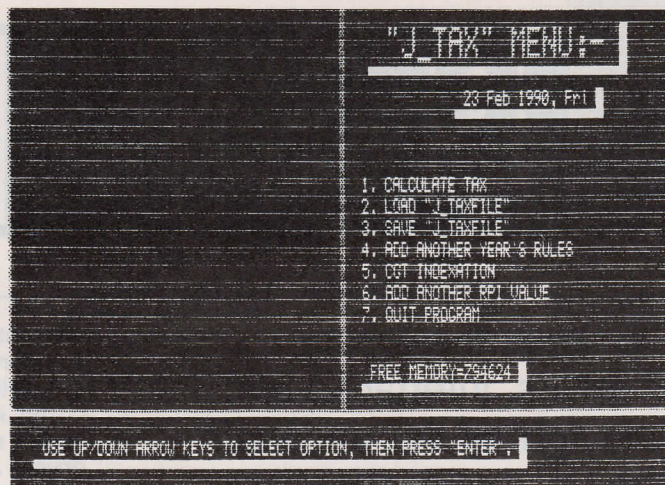
Once Accounts are set up you enter bill payments into them each month. Each Account has a column for payments and another for the "Balance", being the amount which should be in the savings account you have opened to handle the payments for this Account. For each Account, a current Balance figure is shown, based on the average monthly amount which has to be saved to meet the predicted level of payments on that Account during the year, less any actual bill made during the current month.

You cycle through all the Accounts, entering payments made wherever appropriate. When the process is completed you are shown the current Balance overall and are asked to enter the balance in the savings account you have opened for bill payment.

The difference between these savings account figures and the Balance calculated from payment of bills lets you know how much you need to deposit in the savings account that month to keep finances in balance — see the illustration with headings "MONTH/DESCRIPTION/PAYMENTS/BALANCE".

The tax calculation part of the program is straightforward to use, provided you have the necessary income figures. The opening menu is illustrated here "J_TAX" MENU:-. If the tax year with which you are dealing is already covered by the program — years 1983/84 to 1989/90 currently — all you need do to calculate income tax liability is select Option 2 from the menu, to load the current tax data from the file "J_TAXFILE", then select Option 1 and enter the appropriate figures for income as they are requested by the program.

To deal with forthcoming years you select Option 4, "ADD ANOTHER YEAR'S RULES", and enter the tax bands and rates; those figures are given in newspapers, at Budget time, and on tax forms, so there should be no difficulty obtaining or entering them. Before figures are entered you are asked whether or not a hard copy is required. The current



tax bands and rates are then displayed and you start entering income figure.

Apart from the obvious personal income from your work you have to enter interest from deposit accounts, both tax-paid — such as building society savings accounts — and gross — off-shore funds — dividends and associated tax credits from shares — credits are indicated on dividend notices sent out by companies; and taxable benefits, e.g., the calculated value of a company car; again, this figure is normally supplied to you, by your employer. Once the entry of data is completed the program displays the overall situation, giving total income and corresponding tax liability — see the illustration headed "INCOME TAX 1989/90".

Capital Gains Tax calculation was simple, although the built-in Retail Price Indicator figures were not up-to-date, stopping at January, 1989; there may have been an update to that information since the program was submitted for review. You enter the name

and value of an asset and the year and month of purchase and sale, and the program provides an "Indexed Cost". That is the notional value of the asset at the time of sale, based on the change in the RPI over the period from purchase to sale. The difference between this and the price realised when the asset was sold is the amount on which CGT can be charged.

The program suggested that a house bought for £8,450 in 1970 had an index-related value of £11,500 in January, 1980 so that, if the house had then been sold for £130,000, the gain for tax purposes would have been $(130,000 - 11580) = £118,420$. This figure was the result of misinterpretation of the instructions on my part; the program states that there was "no taxable gain" prior to 1982 and the figure I should have entered for the cost of the house was the estimated value in 1982, rather than the cost in 1970. The instructions could have been clearer on this point.

Adding new values to the RPI table is simple, although the necessary figures may not

INCOME TAX 1989/1990				EARNED & OTHER INCOME	
SLICE	RATE %	TAX	OWN TAX	INCOME	TAXABLE BENEFITS
20700	25	5175	5175	20700	£0
ABOVE £20700 TAX RATE IS 40%				TOTAL GROSSED INCOME	£296573.3
ALLOWANCES:-				ALLOWANCE	£2785
SINGLE PERSON = £2785				TAXABLE INCOME	£293788.3
MARRIED COUPLE = £4375				TOTAL TAX DUE	£114410.3
WIFE'S EARNED INCOME = £2785				P.A.Y.E. PAID	£0
OR OR WIFE'S EARNED INCOME, IF LESS.				DEDUCTED @ SOURCE	£878.35
				ADDITIONAL TAX DUE	£113532
				MARGINAL RATE 40% (ON £273082.2)	
				AVERAGE RATE 38.9%	

PRESS ANY KEY

be so easy to obtain as tax rates. Printouts are obtainable at various stages and they were simple to produce. As is all-to-frequent with such reports, there was no left margin on the printed page and only 10-pitch characters can be used. The £ sign appeared as a single quotation mark, which was surprising considering you are asked each time the program is run to "Enter QL character to produce the '£' on your printer"; I had entered '£', thinking of my other printer drivers which are set to print a £ as a £.

The program wanted to know what character on the based QL keyboard produces the code which makes a printer using the U.K. standard character set print £ and the answer should have been # — the default.

The £20 cost of this program is somewhere in no-man's land. It is less than the cost of more professional programs, although not much less than a few very good ones. It is more than the basic, single-function type, of which PDQL offers a wide range. For users who find use of pencil, paper and calculator unpalatable, the program is a fairly cheap way of keeping tabs on major household expenses.

The screen presentation is reasonable; clear and largely without frills, it shows what you need to know. On the debit side, there is some over-writing of existing information by new, the response of the menu cursor bar to the up/down arrow keys is very sluggish and there is inconsistency in the required keyboard responses to prompts. None of these is a serious problem but the lack of clear, step-by-step guidance for the new user, in setting up Accounts for the first time and entering data into them, is more difficult. The type of person wanting a program for budgeting is not the type who will want to have to ponder the meaning of "Enter balance in 'bills' a/c". This may have been the same thing as the "actual amount available in your dedicated savings account".

The use of terminology is rather inconsistent. Once you have figured to what each prompt refers, there should be no further problem. Overall, the program will do the job but it is a pity the SuperBasic source code is not supplied.

TROUBLE

Bryan Davies looks at the topical subject of disc drives, interfaces and hard discs in the light of the uncertain future facing the QL microcassettes.

Users hesitating about buying disc drives must have been pushed closer to a decision by the editorial in the February issue. Microdrive cartridges have never been what one could call an economical proposition, even when they could be obtained for around £1 each, and now we have the prospect of them again increasing in price because they will be in even shorter supply.

The purchase price is only part of the real cost with cartridges. Do you stop to decide what you spend in replacements? Would an estimate of 20-50 per cent on top of the original cost sound too high? In the course of up to five years I wouldn't expect many cartridges to survive if they have a significant amount of usage. Well-treated floppies should last much longer. The price-per-byte of storage has always been high compared to floppy discs and it is now about 10-20 times as high. The problem in future presumably will be to get them at any price.

The price of storage boxes for cartridges has been high compared to those for floppies. Everything negative, so far, but cartridges have the advantage of being much smaller, although that is an advantage which surely does not weigh too heavily with most users. There is no real difficulty sending floppies through the post but they occupy more space on the desk or workbench. Or do they? As one floppy stores the same amount of data as seven cartridges I do not think there is much difference in the space required for comparable amounts of data.

Price fall

Floppy drives have fallen a great deal in price in the last few years but you have to consider the cost of an interface, too, and they have not become cheaper. Many users will have an interface anyway because it arrived with the extra memory they had to have. Buying second-hand or discontinued lines is the only way when you are on a tight budget and you are likely to find far more choice at reasonable

prices of drives than interfaces. A reasonable price for a drive without power supply or case is around £45-55; case and power supply should be obtainable for less than £15. If you look long enough you might obtain a complete unit for £50 second-hand. A second-hand interface could cost as little as £30 but will be more likely to be £80-150. It depends largely on whether or not you are knowledgeable enough to be aware of which out-of-fashion units are safe to use.

Quantities

The user who is in the habit of buying significant quantities of cartridges should be able to prove to his satisfaction that the overall cost of using floppies is less than that of Microdrives. To be strictly accurate in any commercial comparison of costs you should, of course, calculate the amount of time saved by using the faster drives. Even if you value yourself at no more than £5 an hour the savings soon run into three figures.

The occasional user will still return to the question of whether or not the undoubted practical merits of floppy drives are worth the extra investment. It is like beating one's head against the wall because of the relief when you stop; once you have used floppy drives for a time, returning to Microdrives is painful.

There is another contender for your money now — the hard disc. While you are spending a few hundred pounds, should you spend a few more? The answer must be "yes and no". As with changing from Microdrive to floppy, once you have used hard disc you are not keen to revert to floppy. Do not consider it as an either or matter, though. To my mind, there is no sense in giving up Microdrives totally when you buy floppies and, likewise, using hard disc should not cause floppies to be abandoned.

You always need to back-up files and doing so on another type of drive makes good sense; if your main drive malfunctions you may still be able to work with the back-up drive type. The interfaces for the

different drives are likely to be separate, so failure of an interface may not put you completely out of business.

The interface is the key item when costing an upgrade to either floppy or hard drives. As the drives are basically the same as are used on PCs they have fallen in price through the years, because of the more competitive nature of the PC market. The same does not apply to QL interfaces. An example is the situation I have where an old 10MB hard drive is waiting to be used on PC or QL. To get it working on the PC would involve buying a small plug-in interface card for about £40; the existing operating system and additional utility software handles any hard disc requirements. With the QL it is not really clear to me what the cost would be but, at best, it looks to be in the range £185-240. Presumably that expenditure would cover comparable software facilities to those on the PC but I have seen no independent reports to confirm that.

There is more to the matter than that. Fitting a hard drive to a QL system is not the plug-in-and-go job it is on the PC. How will the hard drive interface be connected and will it be compatible with existing floppy interface and memory expansion cards? *QL World* readers will have seen advertisements for hard drives and interfaces from Miracle, Rebel and ABC. The Miracle interface is connected to the QL through the ROM port and leaves existing interface/memory cards undisturbed but it is not sold as a separate item. In addition, the interface is presumably of the SCSI type — as are the CST QL and Thor interfaces — and this rules out the use of commonly-available cheap hard drives.

Interface

The ABC unit is available either as a complete hard disc set or as an interface only. From what is indicated the interface does not include the controller for standard types of hard drive, so that would have to be bought separately. The ST11 type mentioned costs about £40, making the total cost excluding drive and power supply £170. Existing interface/memory cards appear to be supported and would be plugged into the end of the hard drive interface but there seems to be some question about support for the Trump Card.

It is likely that prospective purchasers of hard disc would already have a Trump

SHOOTER

E M S O L V E D

Card, so compatibility with it is important. The software looks to be adequate to cover normal hard disc activities. You would certainly have to allow plenty of extra space for the extension of the QL at the left end by the interface, the ribbon cable from this to the controller, the controller itself, the hard drive and its power supply. ABC obviously sees this upgrade as one which users would install into one of the large, PC-type boxes which have been sold in recent years. As with the other available units there is little in the way of user reports and the prospective purchaser must accept that there might be some lack of functionality.

Faster

The Rebel unit is reported to provide faster disc operation than the Miracle one and it has the advantage of being available either as interface only or a complete set. The interface is the standard ST506/412 type, which is the one needed by most PC hard drives. The prices as advertised way back in the October issue of *QL World* were £225 for the interface, £85 for a "four-way buffered backplane" and £195 for a "boxed four-way backplane including power supply".

Information was not provided to enable the user to determine whether more than one of these units is necessary but it appears that the interface will fit into the 64-way expansion port, without the need for either of the other units. Whether or not this interface has provision to allow existing interfaces to be plugged into it was not mentioned presumably the addition of yet another interface without a separate power supply is undesirable. A separate supply would be needed anyway for the drive. The backplane unit with power supply sounds more practicable but that would take the price excluding drive to £420.

A few points on hard drives might answer the question of some users. The interfaces commonly used on PCs are labelled MFM, RLL and ESDI. Forget the last type, since at present it concerns only very high-capacity 100MB and up-drives and is correspondingly expensive. In the past, the MFM type of coding has been used almost universally — it is basically the same method used with floppies — and many cheap drives use it. The RLL type is a development of MFM, provides faster operation and is becoming

the standard.

Drive manufacturers do not recommend mixing controller and drive types — that is, use of an MFM controller for an MFM drive. Intermixing is done but only with selected pairs of units; as an average user, forget the idea. There is another type — SCSI — but that is uncommon on PCs, although it is normal on Macintoshes. It is different from MFM/RLL and cheap SCSI drives are more difficult to find. If you can obtain an old CST interface cheaply that is satisfactory; otherwise, forget it. Incidentally, the CST interface originally supported drives of no more than 20MB formatted capacity.

Drives with capacities less than 20MB are almost certainly several years old. While 10MB is a big improvement on one or two 720KB floppies there is good reason to heed the maxim "figure what capacity you will need, then double it". Older drives do not have automatic parking functions for the read/write heads and they need a software routine to accomplish parking. While the computer may, in theory, never be moved, can you say honestly that it will not be bumped or moved to another location when switched off?

The potential for damage, caused by unrestrained heads banging on the discs, is too expensive to contemplate; make sure your drive is either of the self-parking type or the interface has a matching routine for parking the heads on it. Do not overlook the fact that memory space is needed for a hard disc driver program; Miracle quotes about 55KB of RAM being needed for its hard disc set and that rules out using an unexpanded QL.

Power supply

The need for a separate power supply can be overlooked. In a PC, the "surplus" power is likely to be there waiting, together with the connectors, so that you do not have to spend any more on it. Any drive fitted to the QL will need its own supply, providing 5V and 12V DC. The capacity required will vary a great deal with drive type but it can be about two amps at both 5V and 12V, plus another one amp at 5V for the controller. That excludes whatever the interface requires; it is hoped the interface units currently available with power supplies use the latter for drive, controller and interface.

The yardstick is the £449 charged by

Miracle for a complete 40MB set. It might at first appear that you can save substantially on that figure by a DIY project but check your calculations carefully — there may be little to be saved and you could have plenty of work to do.

Here is an odd sidelight on usage of floppies. My main system disc has been in constant use since 1985 and has only rarely been "flushed out". Files are deleted, and others added, but I do not recollect formatting it. After copying the latest version of *text*⁸⁷ to it, loading of the system seemed noticeably hesitant and formatting was indicated. There were 123 sectors free on the disc before format and 144 after the format and copying all the files back on again. Apart from the slow loading — caused by files being split into pieces all over the disc — about 10KB of space had been wasted.

The first one of my almost 200 3.5in discs is showing some bad sectors; apart from two branded discs which were unsatisfactory when supplied to me, only one other unbranded one has been bad and that refused to give the full number of sectors from new. Only one has gone slightly bad during service. The way the bad sectors were discovered suggested something amiss with the 3.5in drive on the PC, possibly associated with my insistence on getting 1.44MB out of 720KB discs.

The discs vary in age up to four-and-a-half years; some are used virtually not at all, whereas others are given a daily workout. I lost count years ago of how many Microdrive cartridges I have scrapped in five-and-a-half years but the figure is in the dozens, of a total of about 200. At present prices the replacement cost of those cartridges would be around £70-100, around the same cost as a single disc drive.

Recently I spend many hours playing with the *CuePrint* program. As it stands it is not really suitable for beginners and it has one major disadvantage for most users — it works only with Canon or Kaga-Taxan printers. The results are so good, though, that it seems worth appealing to programmers to apply the same concept to other printers. There must be several types of DMP printer which have or can have substantial buffer capacity, into which could be downloaded. This is the essence of what *CuePrint* does, although it has many other features.

Good-looking fonts have to be

designed and an easily-usable font design program is desirable. CuePrint has a good font designer but many users would have no need of it because the supplied fonts are good as they stand. The output is NLQ print, with or without proportional spacing. If the Kaga is any criterion the fonts supplied with the program are all better than what is supplied as NLQ in the printer.

The appearance of text printed through CuePrint is distinctly better than anything the printer can produce on its own. Desirably, any "universal" program would accept input from all the obvious sources — *The Editor*, *text⁸⁷*, Quill and so on. Almost certainly the input would have to be in ASCII form, as with CuePrint. That gives the additional facility to print files taken from other computers with the aid of transfer utilities such as *DiscOver* and *XOver*.

Various small points of criticism were made in the review of *text⁸⁷* version 3.00. These points were made to the author of the program at the time the review was written and a revised *text⁸⁷* disc was received from him soon afterwards.

The Word List editor now works correctly — there was a small error in the boot file calling it previously. The failure to acknowledge new words with apostrophes in them has been corrected; the

words added to the word list but the checker somehow ignored this subsequently. When both parts of a hyphenated word pair were unrecognised, only the first word would be picked up on the first pass; it took another pass to get the second word picked up but this has been attended to now.

Two spelling mistakes have been corrected, one in the Main Word List and the other on a menu.

The instruction booklet is now much more comprehensive, having 108 pages; that should largely answer complaints about inadequate explanation of functions. In my experience, no-one has been more responsive to suggestions and critical comments than this author.

The lack of response suggests that various suppliers are not what one could call active in the QL market now. There is no change from last month regarding outstanding queries to **SUB, Schön, Ultrasoft and Omnidale**.

When becoming concerned about the time taken for a supplier to deliver ordered goods, remember that the supplier is within the laid-down requirement if goods are despatched within 28 days of receipt of order. Some suppliers consistently will do better but you will get nowhere threatening legal action when the period involved is not over 28 days.

INFORMATION

Floppy disc drives:
Adman Services,
Admaston, Telford,
Shropshire TF5 0BG.
Tel: 0952 255895.

Matmos Ltd,
Unit 11,
The Enterprise Park,
Lewes Road, Lindfield,
West Sussex RH16 2LX.
Tel: 04447 2091 and 3830.

Hard disc drives and interfaces:
ABC Elektronik,
Huegelstrasse 10-12,
D-4800 Bielefeld 1,
Germany.
Tel: 01049 521 890381.

Miracle Systems,
25 Broughton Way,
Osballdwick,
York YD1 3BG.
Tel: 0904 423986.

Rebel Electronics Ltd,
12 York Place,
Leeds LS1 2DS.
Tel: 0757 86630, 0904 708073.

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Eprom 27128 250n/s 16k@£ 5.75c
ULA CHip ZX8301@£ 15.64c

MAGNETIC MEDIA

3.5" (each) d/s disc@£ 1.38c
3.5" (10 of) d/s discs@£ 11.50c

SOFTWARE 87 (State MDV or Disc)

TEXT 87 V.3.00@£ 60.00d
FOUNDED 88@£ 15.00c
FOUNTEXT 88@£ 25.00c
TEXT 87/FOUNDED 89/FOUNTEXT 88@£ 94.99b
2488 PRINTER DRIVER@£ 15.00c
Upgrade to Text 87 V.3.00. Return old copy together with ...@£25.00c

MONITORS (Price including lead)

Philips BM7522 Amber Hi-Res@£ 97.75a
Philips CM8833 Colour Med-Res@£270.25a
Philips AV7300 TV/tuner for above@£ 69.00b
Philips BM7502 Green Hi-Res£97.75a

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QMON II@£ 23.00d
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QL

S C E N E

Text⁸⁷ bugs fixed

Fred Toussi of *text*⁸⁷ has been in touch with *QL World* contributor Bryan Davies to reply to points made by Davies in his review of *text*⁸⁷ V3 - *QL World*, April, 1990. Toussi acted quickly; his letter reached *QL World* before the April issue went to press but too late for us to include full details. The points which have been updated are:

An error in the boot file calling the word-list editor has

now been corrected.

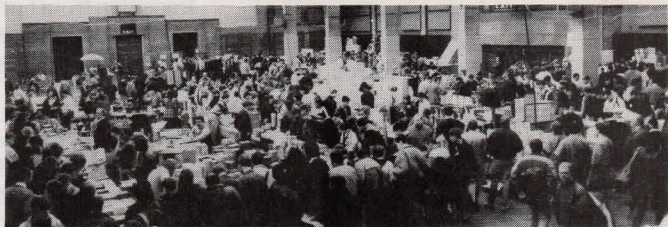
The failure of the spelling-checker to acknowledge words containing possessive apostrophes has been corrected.

Two spelling errors in the documentation have been corrected.

The printer driver information file has been modified slightly; it appeared to state previously that 8.5cpi was one of the character sizes available with Epson FX-80 and Canon/Kaga drivers, which is not the case.

The failure of the spelling-checker to acknowledge the second word of a hyphenated pair appears to occur only when neither word of the pair appears in the spelling checker. Toussi is in the process of fixing this problem.

Computer fair goes well



The first All Formats Computer Fair was a success. The low cost of exhibiting appears to have afforded a wide and interesting range of vendors and several thousand keen computer enthusiasts.

So well received was the Fair that it has been decided to repeat it as soon as possible. According to popular demand it will now be for a whole weekend, April 28-29. The

venue remains the New Horticultural Hall and it will be open from 10am to 5pm on Saturday and 10am to 4pm on Sunday. Stands cost £120 for the two days.

As the name suggests, it is the show for everyone interested in computers, no matter which machine.

For information call John Riding on 0225 447453.

QPAC II launched

QJump has begun to forward the *QPAC II* suite of utilities to customers anxious to make full use of its superb file- and task-management facilities. Available from Care Electronics, *QPAC II* complements the *QPAC I* group of utility tasks and is best seen as a replacement for the *QRAM* package.

QPAC II implements a new task management environment which allows most executable tasks, including many badly-behaved ones, to exist simultaneously in the *QL* memory. In addition, *QPAC II* includes a

pointer interface which can be used from the keyboard or through a mouse to interact with *QPAC* jobs and to select which tasks to activate. Hot-keys, typically a combination of the ALT key and a QWERTY key which trigger tasks, are implemented with a clutch of new keywords added to *SuperBasic* but their presence in *QPAC II* is outshone by the introduction of on-screen "buttons".

A button is a small multi-tasking window which can be "hit" by the pointer to activate

programs such as *Quill* and *Eye-Q*, call up one of the *QPAC* menus of place text into the keyboard buffer and from thence into the current task. The file management menu facilities are much-improved compared to *QRAM*, with resizable windows, interrogation windows and the intelligent selection of defaults. The *RAM-disc* and spooler from *QRAM* is bundled with the new package but, sadly, the *QRAM* window dump utility has had to be omitted to make room for other facilities.

Installation of the standard suite of routines is a matter of a few lines of code in a *BOOT* file. Users can then define a set of hotkeys and a set of buttons

to meet their particular needs. For a system as flexible and powerful as *QPAC II* it is surprisingly easy for non-programmers to tailor a complete environment for, say, the *Psion* suite to be loaded from disc at the start of a computing session. Different environments could be designed for *SuperBasic* programming, *CAD* work, desk-top publishing and so on, according to the user's wishes.

A full review of *QPAC II* is expected to appear in next month's *QL World*. *QPAC II* is available from **Care electronics, 800 St Albans Road, Garston, Watford** and it costs £49.90, or £29.90 as an upgrade for *QRAM*.

SPEM still supplying

SPEM of Italy has contacted *QL World* in response to enquiries from readers to say that it is still supplying *QL* products. Proprietor Guido Masoero states that he now sells only direct to customers, claiming difficulty in recouping cash from U.K. dealers as his primary reason.

A reader in Italy has also written to confirm that the company is trading reliably and that delivery and response times have been reliable when correct postage and packing have been included. In his experience a catalogue and price list is difficult to obtain and telephone callers should

not expect an English response.

"I have some problems speaking English", says Masoero. Non-Italian speakers should send enquiries in writing and make their requirements as clear as possible.

Masoero quotes the following prices, in sterling, ex-VAT, but inclusive of post and packing: *QL* keyboard, £80; disc interface, £60; single and dual disc drives, each £189; *PC-style* cabinet for the *QL*, £80; video

digitiser, £120; *QL ROM* for rear 16K *Eprom*, £5; *DIY 512K* memory expansion, £100; hard disc system, £320; *Qeprom* for 192K *ROM*, £40; *MandelQuickly* program, £20; *Professional CAD* for *PCB* design, £90; spare parts as available.

SPEM is now at Via Aosta 86, 10154 Torino, Italy, Tel: overseas code plus 39 11 857924; fax: overseas code plus 39 11 280009.

ON THE DESK

I David Drysdale explains how to produce a high-quality page for print without a DTP package.

The day of the desk-top has arrived, we are told. Anybody with a QL computer and a simple DTP program is supposed to be able to produce printwork as good as any professional printshop. Frankly, that is not true. Even so, that day will come, particularly when laser printers are cheap enough for QL users to buy and the DTP programs all incorporate a full range of typographer-designed typefaces.

At present the fonts of type available on some DTP packages are below this standard. Sometimes it is just crude, mechanically-drawn lettering – and looks it. By contrast, a professional printer's typefaces have been designed carefully by top typographers such as Eric Gill for readability and elegance and many of them have been around for most of this century.

A few years ago, when the first crude dot matrix printers were developed, several computer boffins suggested, seriously that we would all have to adapt to reading everything in dot matrix form because "... that is the future of computerised print".

That mentality persists. Look carefully at some of the DTP-produced advertise-

ments which appear, particularly in computer magazines, and you will find that few concessions are made to the older way of doing things. The result is often a collection of typefaces in assorted sizes filling every millimetre of space.

The way forward for today's QL user could be to follow the example of the many printing firms which have eased the transition from hot metal letterpress printing to fully-computerised desk-top by progressing through another stage, the paste-up process.

That simple process involves producing columns, or galleys, of text and making them into pages by sticking them on a marked out page plan with a repositionable wax adhesive. Photo-typeset headings and display lines, picture blocks and rule borders are then added until the page is complete. It sounds very primitive and yet, until recently, many national newspapers and virtually all magazines were produced in that way. Some still are – it is a very accurate, cheap and reasonably fast way of laying out a page.

This method is worth considering by any QL user producing a club or works magazine and the only software needed is a word processing package such as Quill. Photosetters for the headings and display lines will not be available, of course, and the solution is to use rub-down lettering such as the Letraset range, which is also still used in professional print production.

The secret of this process is in not putting lettering directly on to the page. Every display line made with rub-down lettering must be on a separate strip of paper which can be positioned and pasted down afterwards. Where a magazine has the same display line, such as Editor's Notes, in each edition, the headings can all be peeled off, stored and used again.

The text is best produced in long columns rather than pages and if Quill is used the way to do it is to press F3 followed by D for Design and set the page size to 0 lines. When choosing a line width, or measure in printer's terms, remember that over-wide columns are not so easy to

read as narrower ones but the usual Quill disadvantage of being unable to produce double columns is of concern when using the paste-up process.



Narrow columns, of course, mean plenty of word breaks and it is there that the Quill hyphenation facility comes into its own. My approach is to set the column first and then to run down it again looking for errors and setting the hyphens. Making good word breaks is an art but look for natural breaks such as at the end of syllables or between consonants. Very often a word breaks best either after the first three letters or after the first six. It is always worth trying this trick first. There are WP and DTP programs available on the QL which will hyphenate for you, of course.

With my combination of Quill and a daisywheel printer I am not able to imitate a professionally typeset column accurately. The print is needle sharp and photocopies well but, as on a conventional typewriter, all the letters are exactly the same width, which gives the column a typewriterish look. For that reason I have not produced a sample page, but you will see the difference if you compare most well-produced amateur magazines to a professionally produced one.

Professional typesetting, in contrast, has proportional letter-spacing which means that letters such as *i* and *l* will stand much closer to each other than on a typewriter and the text will look better and be more readable.

QL users who have a good-quality dot matrix printer or a sophisticated daisywheel which will accommodate proportional spacing will get greatly improved text by using a WP program such as *text*⁸⁷ which can make use of the capabilities of the machine. Many of the Digital Preci-

sion desk-top publishing programs also have this facility and have some very good type fonts, too.

Basic equipment for the paste-up method is not expensive. A stripping knife and cutting board are the main essentials, plus an aerosol of repositionable adhesive such as Spray Mount, or even Cow Gum. Other materials needed are sheets of rub-down transfer lettering such as Letraset and a steel ruler to cut against. Useful, too, are two spools of Letraline, or

“It sounds primitive and yet, until recently, many national newspapers and virtually all magazines were produced in this way.”

similar, which make the creation of rule boxes and borders easy.

Before buying any materials it is a good idea to visit a local graphics supplier to buy a copy of the Graphic Design Handbook by Letraset. It will highlight the vast amount of material available for paste-up work, including an incredible range of beautifully-designed typefaces.

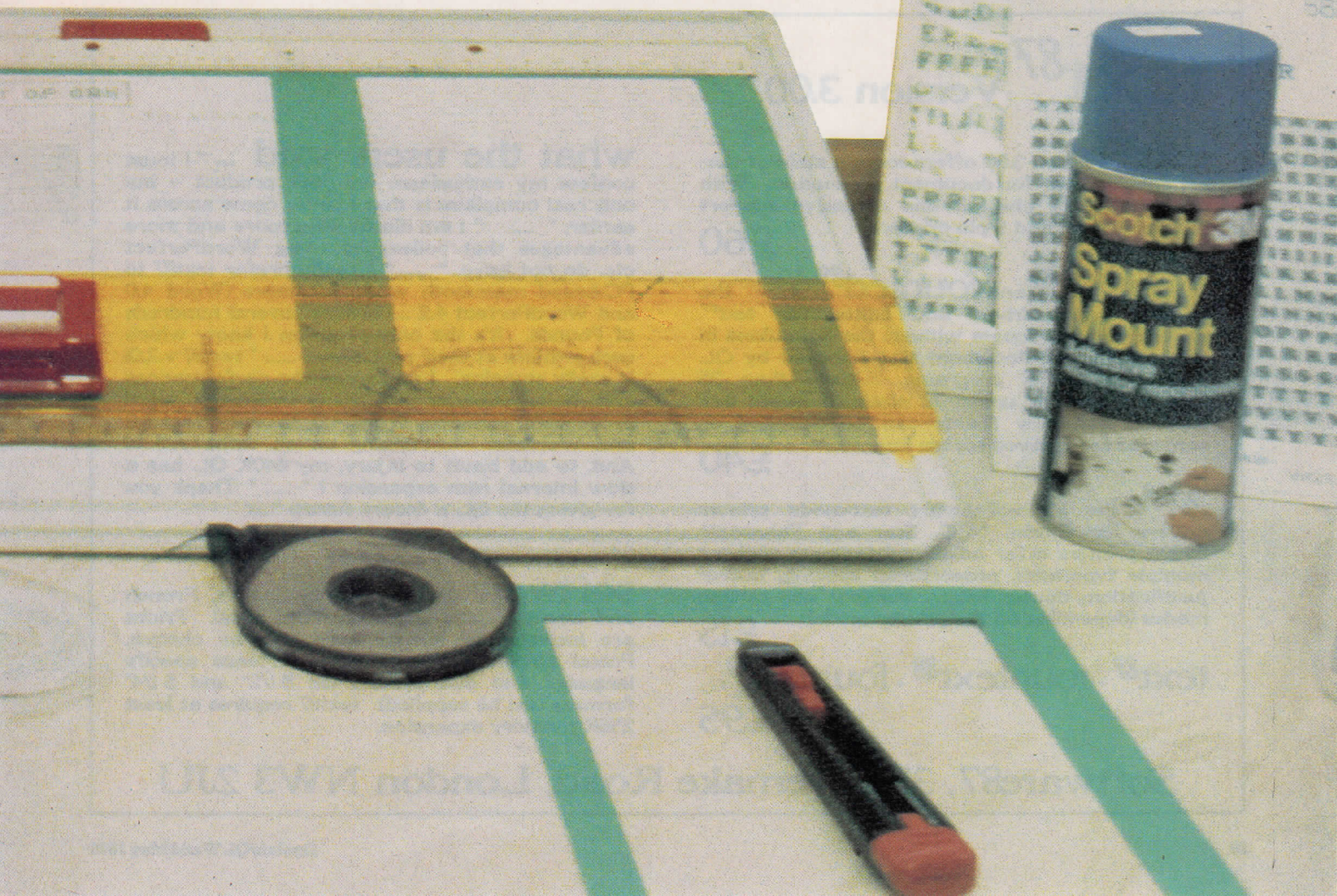
Adopting a printer's approach to the production of documents instead of a computerised one is a sound policy. Many of the sophisticated facilities of the better QL desk-top programs are rooted in printers' requirements and without a knowledge of printing skills they cannot

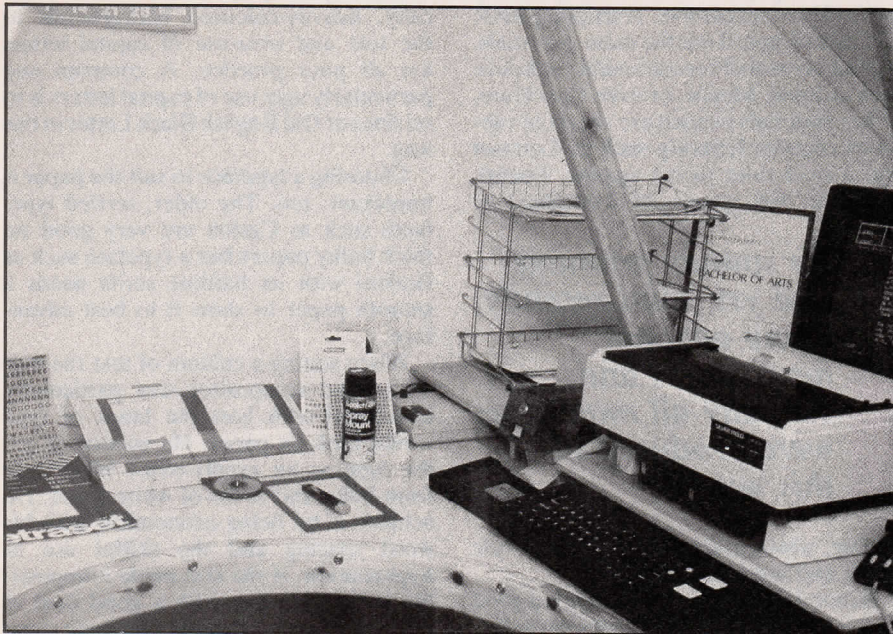
be used effectively. (See DTP Forum in last month's QL World — Editor.)

The first aim of a professional printer is readability. Display lines which run vertically, heavily-coloured backgrounds to the text and over-use of capital letters are all poor practice. A common and particularly ugly use of capital letters is to set lines of Old English Black Letter in this way.

Choosing a typeface to suit the paper is important, too. The older, serified typefaces such as Caslon are very good on thick bulky papers but a typeface such as Bodoni with its hairline serifs needs a smooth paper to show it to best advantage.

When setting a column of text the old-time hand compositor was particularly concerned with how the block of type would look on paper. He wanted to see the type as an evenly-toned block free from holes and rivers of white space. He achieve it by being economical with his word spacing and the skilful use of hyphenation. If the text made it impossible to avoid a line with a good deal of unwanted space he would distribute some of it, skilfully, through the letters. He would go back and respace two or three lines to make a break in a river of space which was running vertically through his block.





The balance of the typeblocks and the display faces was important, too. He would see them all as "weights" and make sure the finished piece was not unbalanced or top-heavy. Controlling the distribution of white space was the main way of achieving this and he knew the importance to the legibility of the document of having plenty of white space.

Before starting to typeset, particularly with display work, the craftsman printer

would always make a plan or layout of the job. He would begin by making a series of quickly-drawn miniature sketches and developing the most promising one into a page layout. That would not be drawn elaborately but would have blocked-in type masses and sketchy display lines which were adequate for the job.

For the construction of the paste-up the base-sheet would be marked with the

exact type area of the page and if sections of the page had already been earmarked for advertisements, they would be marked, too.

The QL user working on, say, a church or club magazine could make base-sheets from a cardboard stencil with the exact type area cut out. It is best to make a double stencil showing two pages together which can also determine the paper margins round the type. Always remember to put more space in the bottom margin than in the upper one to give optical centring. The space between the pages should be equal to the side margins to give the appearance of one unit when a double-page spread of the magazine is opened.

Finally, few QL users adopting the paste-up method are likely to find it easier than DP. They are certain to become irritated with the tasks which DP packages can do so much faster and so will probably start to combine the two methods. That is good. Having looked at printing from the professional angle, QL users will be in a position to use DP facilities to their full advantage.

They will certainly avoid the kind of situation which exists in the world of photography where, because of their lack of expertise, millions of people with superb computerised cameras are producing pictures much worse than many taken half a century ago with simplistic box Brownies.

text⁸⁷ Version 3.00

text⁸⁷ version 3.00 offers today's state-of-the-art environment for document production. With integrated spell checker and extensive support for daisywheel and 9-pin printers.

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24⁸⁸, the state-of-the-art text-mode printer drivers for Epson, NEC, Star and Panasonic 24-pin printers offer advanced features such as multiple typefaces, proportional spacing, micro-justification, double height, shadow and outline modes (depending on the printer model).

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what the users said ... " I must confess my enthusiasm for your product - my only real complaint is that I never came across it earlier. " " I am discovering more and more advantages that colleagues using WordPerfect etc. do not have. " " I really prefer text87 to PC-based mammoth wordprocessors (Word 4.0 and WordPerfect 4.2 ...) costing several hundreds of Pounds. It's the only program I know which uses printers at their real best. " " text87 v.2.01 is really stunning. I measured the performances and it is superior to many MS-DOS word processors, including Word 4.0, WordPerfect 4.2 and Wordstar 4.0 running on an 8mhz AT !!! And, to add insult to injury, my 640K QL has a slow internal ram expansion ! " " Thank you for giving the QL a decent future ".....

software is available in English, French and German (also in Italian from May). Prices are inclusive of airmail. Payable by cheque, Postal Order or Eurocheque. Please specify language and disk system (all 3 1/2" and 5 1/4" formats can be supplied). text87 requires at least 256K memory expansion.

Software87, 33 Savernake Road, London NW3 2JU



SUPER BASIC

I Mike Lloyd continues his examination of the QL character set with a look at the manipulation of individual characters.

The SuperBasic article last month examined the construction of the QL character sets and demonstrated how they could be copied into RAM and modified to suit the needs of a particular program. ASCII characters are also the subject of this month's article but the emphasis is more about manipulating whole characters than on their individual designs.

SuperBasic is well-blessed with some unusually powerful keywords related to character printing, although it lacks the very useful PRINT_USING command found in many other Basic dialects. It is easy to forget some of the more arcane SuperBasic printing commands and print separators and so it is worthwhile occasionally to review the User Guide entries on the AT, CURSOR, FILL\$, STRIP, PRINT, INPUT and UNDER commands to refresh the memory.

A feature provided by few languages is the ability to learn about current screen parameters, cursor positions and so on from within a program. The SuperBasic article in the June, 1987 issue of *Sinclair QL World* examined the Qdos data blocks established for each screen window. In last month's article the locations of the character sets for each window were discovered by delving into the appropriate data block.

Listing one accompanying this month's feature contains a number of functions which allow the programmer to interrogate the computer about important window parameters, directly or from within a program. Many of them will be put to use in the subsequent listings.

The functions all have a similar construction. They each take an integer channel number, which must be open and linked to a screen device, as an argument. The channel number is used by the chanbase function to determine the start address of the data block associated with a given window. The functions return an integer value found by peeking the contents of an address offset from the start of the channel data block.

LISTING 1

```
100 DEFine FuNction WinWidth (chan)
104  RETurn PEEK_W(ChanBase(chan) +28)
108  END DEFine
112 DEFine FuNction WinHeight (chan)
116  RETurn PEEK_W(ChanBase(chan) +30)
120  END DEFine
124 DEFine FuNction CharWidth (chan)
128  RETurn PEEK_W(ChanBase(chan) +38)
132  END DEFine
136 DEFine FuNction CharHeight (chan)
140  RETurn PEEK_W(ChanBase(chan) +40)
144  END DEFine
148 DEFine FuNction Cursor_Xpos (chan)
152  RETurn PEEK_W (ChanBase(chan) +34)
156  END DEFine
160 DEFine FuNction Cursor_Ypos (chan)
164  RETurn PEEK_W (ChanBase(chan) +36)
168  END DEFine
172 DEFine PROCedure InkVal (chan)
176  RETurn PEEK (ChanBase(chan) +70)
180  END DEFine
184 DEFine PROCedure PaperVal (chan)
188  RETurn PEEK (ChanBase(chan) + 68)
```

The names chosen for the functions are designed to make them self-explanatory. The functions WinWidth and WinHeight reveal the dimensions of the active area of a screen window excluding any border which might exist. CharWidth and CharHeight measure the space occupied by a character in pixels. Cursor_Xpos and Cursor_Ypos determine the location of the top left corner of the cursor measured in pixels from the top left corner of the window.

LISTING 2

```
200 DEFine FuNction ChanBase (x)
205  RETurn PEEK_L (PEEK_L(163960) +4 *x)
210  END DEFine
```

InkVal and PaperVal reveal the current INK and PAPER colours. Many other similar functions can be written to obtain further information from the data blocks; interested readers should refer to the June, 1987 issue for details of window block offsets.

The second listing shows a function which returns the base address of any channel data block. It is worth repeating the warning that different devices have

different layouts for their particular blocks; it is the programmer's responsibility to ensure that the channel number passed to the function relates to an open channel linked to a screen window.

Two shortcomings in the SuperBasic set of printing commands can soon be dealt with without recourse to Qdos. The C programming language and the Psion Archive language, among others, contain functions which convert text to upper- or lower-case. SuperBasic programmers must instead accomplish this task using routines similar to those at listing three and four.

The Upper\$ and Lower\$ functions are very similar, with the one identifying lower-case letters and subtracting 32 from their ASCII values to convert them to upper-case and the other doing the opposite. Unfortunately it is necessary to find the ASCII value of every character in the string because of the way in which SuperBasic compares the letters of the alphabet. In the ASCII character set capital letters come first but when SuperBasic compares two strings it ignores the case of the letters so that the expression:

"G" < "a"

is not true even though the ASCII value of "G", 71, is lower than that for "a", 97.

Serious programmers might like to obtain that extra percentage of speed from their programs by peeking the Qdos variable tables to discover the location of the variable string to be converted and then using binary arithmetic to carry-out the required changes. Alternatively, and

LISTING 3

```
300 DEFine FuNction Upper$ (a$)
305  LOCAL c, cval, Temp$
310  Temp$ = a$
315  FOR c = 1 TO LEN(Temp$)
320    cval = CODE (Temp$(c))
325    SELECT ON cval
330      = 97 TO 122: Temp$(c) = CHR$(cval -32)
335  END SELECT
340  END FOR c
345  RETurn Temp$
350  END DEFine Upper$
```

LISTING 4

```

400 DEFine FuNction Lower$ (a$)
405 LOCal c, Temp$
410 Temp$ = a$
415 FOR c = 1 TO LEN(Temp$)
420 cval = CODE(Temp$(c))
425 SElect ON cval
430 = 65 TO 90: Temp$(c) = CHR$(cval +32)
435 ENd SElect
440 ENd FOR c
445 RETurn Temp$
450 ENd DEFine Upper$

```

more realistically, string variables can be poked to a reserved memory area or written to a file and converted as required *en route*.

While the QL is a popular vehicle for desk-top publishing applications which allow pixel-perfect text justification there is a good case to be made for providing the same kind of facility in SuperBasic programs. A QL can be used as a sophisticated shop window advertisement medium, or it might be used for interactive education programs. Text-based adventure games are gaining in popularity on the QL. In any of those cases, the screen displays would be enhanced by better text-justification than that normally provided by SuperBasic.

LISTING 5

```

500 DEFine PROCEDURE Justify (chan, text$)
505 LOCal Temp$, ww, wh, cw, ch
510 LOCal Xcurs, Ycurs, max
515 Temp$ = text$
520 ww = WinWidth (chan)
525 wh = WinHeight (chan)
530 cw = CharWidth (chan)
535 ch = CharHeight (chan)
540 Ycurs = Cursor_Ypos (chan)
545 Xcurs = 0
550 max = ww DIV cw
555 ProPrint Temp$
560 ENd DEFine Justify

```

Listings five to seven justify text in any window so that words are not split at the ends of lines and so that the right-hand edge of the text is aligned vertically rather than being left ragged. The routine is relatively flexible about window dimensions and character sizes but it can be confused by large characters in small windows.

The first procedure provides the keyword used to activate the process. The two parameters required are the channel and the text string to be printed. Once again it is for the programmer to ensure that the channel is linked to a screen or console. To avoid destroying the variable passed to the routine a temporary copy, Temp\$, is made. Several unchanging parameters such as the window and character settings are obtained using some of the functions described earlier.

These short-named variables occur frequently in the following routines and their use in lieu of the functions shortens the code and accelerates program performance considerably. An important variable which retains its value throughout the printing process is max; its value represents the maximum number of characters which can be printed on one line of the

window given its current width and the size of the characters.

The utility is very easy to use. The window it is to use should be positioned and cleared. Optionally, an AT statement can move the cursor to any line in the window to mark where printing will begin. Horizontal displacement of the cursor is ignored, because every line of text will be printed to cover the entire width of the window. Whole paragraphs of anything up to 32,767 characters can be passed in one portion to the routine.

LISTING 6

```

600 DEFine PROCEDURE ProPrint (t$)
602 LOCal chs, n, gap, Cycle
604 IF LEN(t$) > max
606 FOR n = max TO 5 STEP -1
608 IF t$(n) = "-": chs = n: EXIT n
610 IF t$(n+1) = " " AND t$(n) <> " "
612 chs = n: EXIT n
614 ENd IF
616 NEXT n
618 chs = max
620 ENd FOR n
622 dif = ww -chs *cw
624 gap = dif DIV chs
626 dif = dif - (gap * chs)
628 IF dif
630 Cycle = chs DIV dif
632 ENd IF
634 ELSE
636 chs = LEN(t$): gap = 0: dif = 0
638 ENd IF
640 FOR n = 1 TO chs
642 CURSOR#chan, Xcurs, Ycurs
644 PRINT#chan, t$(n);
646 IF dif > 0
648 IF n MOD Cycle = 0
650 Xcurs = Xcurs + 1
652 dif = dif -1
654 ENd IF
656 ENd IF
658 Xcurs = Xcurs + cw + gap
660 ENd FOR n
662 IF chs < LEN(t$)
664 Xcurs = 0
666 IF Ycurs +ch <= wh - ch
668 Ycurs = Ycurs + ch
670 ELSE
672 SCROLL#chan, -ch
674 ENd IF
676 t$ = t$(chs +1 TO): Trim t$
678 ProPrint t$
680 ELSE
682 RETurn
684 ENd IF
686 ENd DEFine ProPrint

```

The penultimate line in listing five calls the ProPrint routine, reproduced at listing six, which is called recursively to print each separate line of text. It is rather lengthy but falls naturally into three logically separate parts. Its first task is to identify how many characters from the beginning of the text string can be printed on a single line without breaking any words. It must then print those characters, adjusting the spacing between them so that they occupy exactly the entire width of the window.

Finally, it must handle new lines which can, if required, scroll the window for the next line of print. At that stage the characters printed are trimmed from the front of the text string and the remainder are used as the parameter for a recursive call of the ProPrint procedure.

The longest string which could occupy

one line is determined by the max value. If character number max is followed by a space, or if it is a hyphen, it is a natural break point for the string. If that is not so the character immediately preceding it must be checked to see if it meets the rules. The checks continue until a suitable break point is met or until the beginning of the string is reached. If no space or hyphen exists the routine is compelled to return to character position max and split the string there, regardless of whether a word is broken, or not.

All this logic is contained in the FOR...NEXT loop at lines 606 to 616. Having determined how many characters to print on the line a quick calculation reveals the difference between the width of the window and the width of the character string printed with normal spacing. Sometimes the difference is so great that there is space for an extra pixel or more of space between each character in the line. Whatever space remains is shared a pixel at a time to selected characters until no more spaces are required to align the right-hand-side of the text with the edge of the window.

If the widest spaces were all at one end of the line the result would be obvious and distracting to the reader, so extra spaces have to be spread evenly throughout the line to minimise the impact on the eye. The process as a whole is called "packing", a term which will be familiar to printers and DTP users.

The variable dif initially holds the total difference to be made up. The gap variable is then made to represent the number of pixels, if any, which can be fitted between each and every character. If the difference does not divide evenly between the number of characters on the line, an unlikely occurrence, the Cycle variable is set so that additional pixels can be inserted after every nth character.

None of the foregoing needs to be undertaken for the final few words of the text string, because they will be printed with normal spacing. Look at the final lines of paragraphs in this article; if they were to be right-justified the result would be a nonsense.

The second stage of the procedure is to place the characters on to the line. The Xcurs and Ycurs variables hold the location of the cursor. Each character in turn is printed at a precise location specified in the CURSOR command. Xcurs is then incremented according to whether it is standard or the last character in a cycle.

At the end of the line the Ycurs variable needs to be updated. Normally it is increased by the height of the current characters but if the bottom of the screen has been reached the screen must scroll upwards by the same amount instead. Then remove the printed characters from the text string and, if anything remains, call the procedure again.

Part of the trimming process removes any leading spaces from the text string before it is passed to the ProPrint proce-

LISTING 7

```

700 DEFine PROCedure Trim (t$)
705 LOCAL loop
710 REPEAT loop
715 IF t$(1) <> " " OR LEN(t$) = 1
720 RETURN
725 END IF
730 t$ = t$(2 TO)
735 END REPEAT loop
740 END DEFine Trim
    
```

cedure. This is carried-out in a separate utility because it can be useful in other programs. Listing seven accepts any string and removes the first character progressively until it finds a non-space.

The previous SuperBasic article was accompanied by a screen dump showing the words Sinclair QL written in a circle followed by a "That's all folks" message sloping across the screen. That party trick is performed by a relatively simple procedure, although the results can be slow to appear on the screen.

The QL prints characters by looking up a font definition and highlighting the appropriate pixels on the screen. The VecText — vectored text — routine at listing eight does much the same but at a slower pace because it is written in SuperBasic and because it uses trigonometry and floating point arithmetic.

Instead of printing pixels, VecText prints small, ink-filled circles. That allows characters many times larger than normal to be printed. The CIRCLE command can be replaced by suitable BLOCK, POINT

LISTING 8

```

800 DEFine PROCedure VecText (chan, a$, x, y, Angle, SI
ope)
805 LOCAL Base, b, b$, Byte, Bit, BitVal, Chr, Xchr, Yc
hr
810 Base = PEEK_L (ChanBase (chan)+2) -277
815 FOR Chr = 1 TO LEN (a$)
820 Xchr = x +Chr *9 *SIN(Angle)
825 Ychr = y +Chr *9 *COS(Angle)
830 b = Base +9 *CODE (a$(Chr))
835 FOR Byte = 0 TO 8
840 BitVal = PEEK (b +Byte)
841 IF BitVal = 0: NEXT Byte
850 FOR Bit = 0 TO 4
855 IF BitVal && 2^(6-Bit)
860 FILL 1
865 CIRCLE#chan, Xchr + Byte*SIN(Slope + PI/2) + Bit*SI
N(Slope), Ychr + Byte*COS(Slope + PI/2) + Bit*COS(SI
pe), .6 FILL 0
870 NEXT Bit
875 END IF
880 NEXT Chr
885 NEXT Byte
890 NEXT Chr
895 END DEFine VecText
    
```

or PRINT commands if a different effect is required. The size of the printing is most easily adjusted by using the SCALE command rather than by passing additional parameters to a procedure which already needs many.

The position of the super-pixels in relation to each other is determined by the font designs but their overall location on the screen is calculated so that they lie on an imaginary radius of a circle. As an additional effect, characters can be rotated about their own axis.

The routine needs to know a window channel, the text to be printed, the location of the centre of an imaginary circle, the angle of the radius of the circle along which the characters will be aligned and the orientation of each individual

LISTING 9

```

900 REMark : EXAMPLE CALLS
905 a$ = "The Sinclair QL Computer is well-known for it
s prowess at multi-tasking. Its operating system and
BASIC dialect are both extremely advanced. Sadly, the
computer has suffered from a lack of development, since
Amstrad bought the Sinclair name. Nevertheless, thir
d party software, peripherals and enhancements have ma
de the computer immeasurably better than it was in 1984.
"
910 WINDOW 260,200,160,0: INK 2: PAPER 7
915 CLS: BORDER 2, 2: BORDER 4
920 CSIZE 2, 0
925 Justify 1, a$
930 INK 0
935 VecText 1, "SINCLAIR", 10,10, 0, 0
940 VecText 1, "QUANTUM", 30,96, PI, PI/2
945 VecText 1, "LEAP", 25,10, 1, 1
    
```

character. After finding the location of the font for the given window the routine examines each character of the text string in turn. The top left corner of the character — "top left" being from the character's point of view — is represented by Xchr and Ychr. The position of the design in the font is held in the b variable.

A pair of nested loops points to each byte and then to each bit of each byte. An IF..THEN statement uses a bitwise operator — && — to ignore zero bits and draw a "pixel" if the bit is set to one. At the centre of the loops a large CIRCLE statement calculates the final offsets and produces a blob of colour on the screen.

The final listing demonstrates the two main utilities presented this month. VecText is much more flexible than it might at first appear because it can print characters of any size, any angle, any orientation and with any design of pixel which appeals to your imagination. It is best explored by trial and error.



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Microdrive users - read this ...

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We have re-engineered the TRUMP CARD 768K to use the new 1 Megabit DRAM memory chips. This new design runs about 20% faster (twice the speed of the QL's internal RAM) and uses less power than the previous one (still available in the 256K size). It holds the same firmware:

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- a memory cut that resets the QL to appear as an unexpanded 128K type for the few early programs that refuse to run in expanded memory.

The disk interface can access up to 4 disk drives (e.g. our DUAL 3.5" plus our 5.25") and has the same commands as are used for Microdrive control. There is an additional command FLP_USE which can be used to divert all MDV accesses to FLP (the floppy disk interface device name). This makes the transferring of your software from unprotected Microdrive (i.e. the majority of QL software including Quill, Abacus, Archive and Easel) to disk a trivial task. A simple step-by-step guide for transferring Quill as an example is given in the comprehensive TRUMP CARD USER MANUAL supplied with the TRUMP CARD.

The TRUMP CARD 768K's RAM adds to the QL's own 128K giving a total of 896K. Like the firmware the extra RAM is installed automatically when the QL is switched on so that no installation procedure is necessary. The exception to this is TOOLKIT II which can be left uninstalled for compatibility if you have other toolkits; installation consists of simply entering the command TK2_EXT.

Fitting the TRUMP CARD 768K is easy - you remove the door at the left hand end of the QL and slide the TRUMP CARD into the expansion port. A "Beginners Guide" on pages 3 and 4 of the TRUMP CARD USER MANUAL will quickly get the novice and experienced user up and running.

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- ☆ Ideal for Conqueror
- ☆ Through-con for dual 3.5"

This complete unit can be retrofitted to a TRUMP CARD PACKAGE so that Solution/Conqueror users can read PC diskettes. We recommend that Microdrive users upgrading to disks consider the QL-standard TRUMP CARD PACKAGE rather than the 5.25" drive.

(Needs disk interface e.g. TRUMP CARD)

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CONQUEROR

I Ron Massey observes the Conqueror land in PC country and take over its domains.

At the beginning of 1989, the QL had its introduction into the world of the PC with the release of the Digital Precision *Solution*, a program which made the QL into a PC. *Solution* was judged to be genuinely compatible – *QL World*, May 1989; *Quanta*, June 1989 – while certainly not fast, which Digital Precision admitted in its advertisements, *Solution* was comparable in speed to PC emulators for the ST and Amiga, despite the QLs scheduler overhead.

At about the same time an emulator was launched by Ant Computing. It was apparently incomplete and vanished almost immediately. In the spring of 1989 an announcement for yet another emulator, christened *Transformer*, was made: that project would appear to have long since been abandoned.

Not content with having won the emulator war with the help of *Solution*, Digital Precision recently launched an all-new product, *PC Conqueror*. This ambitious release is an all-software PC emulator system for the expanded QL equipped with a floppy drive. DP claims that *Conqueror*, which is a rewrite from scratch, is both substantially faster and more PC compatible than its predecessor.

Fooling one computer into behaving exactly like another with a different microprocessor is no easy task. This operation is carried-out automatically by *Conqueror* and is totally transparent; all the user sees is a PC doing things just the way a PC does them.

To achieve 100 percent compatibility, *Conqueror* must have to do a great deal of interpretative work behind the scenes. If the work is too complicated it will be very processor-intensive and, as a consequence, PC programs will run too slowly. The trade-off between speed and compatibility hence is crucial.

Benchmarks do not always tell the whole story and objective measurements should be tempered with subjective evaluations. These test results should be read in conjunction with the explanatory notes.



As a cursory look at the test results confirms, to express the speed of *Conqueror* in terms of a single number is an over-simplification; it is clear that *Conqueror* is fast at some things and less fast at others.

Having said that, I compute *Conqueror*'s speed expressed as a percentage of the speed of a 4.77MHz PC to be about 48 percent – G.M. of tests 1-11. The similarly-calculated figure for *Solution* is 21 percent, leading me to believe that *Conqueror* can be twice as fast as *Solution*. Certainly *Conqueror* has a much smoother feel and look about it than *Solution*, with screen jerkiness banished. You may find that counts for more than any number of favourable benchmarks.

Fraction

Top-of-the-range 386/486 PC-compatibles can be greater than 20 times faster than a standard PC but most users never need a fraction of that power. Half the speed of the entry-level PC – or faster than the PC if you have an ST/QL – is better than acceptable for a PC emulator; it is good.

Every PC program I tried with *Conqueror* worked satisfactorily. That included many programs Digital Precision mentions in its advertisement; as well as *Adobe Illustrator*, *Applause 2*, *Agfa Presentation Graphics*, *Harvard Graphics*, *Mirage*, *Lotus Freelance Plus*, *Lotus Manuscript II*, *dBXL*, *Grammatik 3*,

Addison-Wesley Wordbench, plus plenty of PD/Shareware material.

Loading *Conqueror*, which is supplied ready to run, is a five-second task. As soon as it is done your QL is in the same state as a PC which has been switched on and has just completed its memory check.

What is then needed is an operating system. If you have legal access to MD-DOS you can use whatever boot-up disc you had for your PC-compatible; *Conqueror* is not in the least version-sensitive and is reputed even to work with the ancient MS-DOS v1.0 but DP would not let its copy out of the nursing home.

If you do not have MS-DOS or equivalent, Digital Precision can supply the latest version, v4.01, in a big Microsoft-sealed presentation box. Configuring MS-DOS from up to six Microsoft discs can be daunting for the beginner; to save your time, DP include a specially-prepared, pre-configured, boot-up disc with the MS-DOS it supplies. DP charges £30-£35 less for MS-DOS than the going rate.

The only difference between v4.00 and v4.01 is that the former contains a bug which can result in corruption of 32Mb or larger hard discs; the changes are to the COMMAND.COM, FORMAT.COM and FDISK.COM files.

What *Conqueror* cannot possibly do is improve the QL screen resolution of 512x256, which is "better" than PC MDA and CGA but not so high as VGA or EGA. Consequently, the last two are not supported but only a small proportion of PC-

OR!

compatibles have EGA/VGA cards or monitors; such cards and monitors are not cheap. Hence, for commercial reasons, there are virtually no PC programs which work only with the ultra-high resolution modes. The few which do – Mirage, price \$1,595; Lumina, £1,995; DGS £12,000 – are expensive, so the restriction is not too serious.

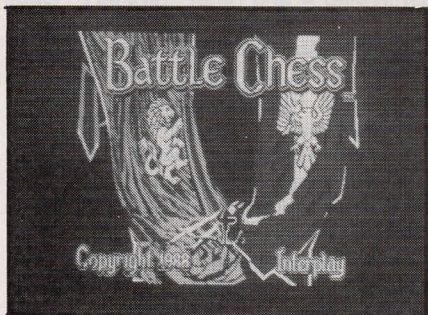
PC keys

Conqueror is designed so that any PC key combination is accessible from the QL keyboard. That is clever, as PC keyboards have more keys than QL keyboards. Conqueror makes it easier to change the “mapping” of QL keys and PC keys to suit your taste or to cope with Thor / Schon / Sandy / SPEC / ABC keyboards, than did Solution. The Conqueror manual has more data on the subject and the current status of the mapping table can be printed-out.

Solution, the ancestor of Conqueror, was already compatible with most well-written PC programs, as confirmed in Mike Lloyd's review. Solution, however, could not cope with programs which bypassed BIOS to access the screen and keyboard directly. Even well-known programs sometimes did this, in the interests of speed. One example is Microsoft *Flight Simulator*; its demo worked with Solution but refused to accept any commands from the keyboard when you tried to fly the aircraft.

Conqueror has been designed to run even with programs which bypass BIOS, so it has no problems with *Flight Simulator* and others of its ilk. “A fantastic improvement over Solution” is how the Conqueror manual puts it. I agree.

WordPerfect, one of the most powerful and slowest of the top PC word processors, felt uncomfortable under Solution. With Conqueror, however, *WordPerfect* is pleasant to use on a QL – I will avoid any comparison with Quill – and races along



		TIME	SPEED (PC=1)
TEST 1: Format a 720K diskette			
QL+CONQUEROR	(disk already QL-formatted)	92 sec	1.08
PC		99 sec	1.00
QL+CONQUEROR		178 sec	0.56
QL+SOLUTION		275 sec	0.36
TEST 2: Boot up with MS-DOS			
		Version	
QL+CONQUEROR	Miracle hard disk	3.3 20 sec	1.45
QL+CONQUEROR	Miracle hard disk	4.01 26 sec	1.12
PC	3½" diskette	3.3 29 sec	1.00
QL+CONQUEROR	3½" diskette	3.3 58 sec	0.50
QL+CONQUEROR	3½" diskette	4.01 64 sec	0.45
QL+SOLUTION	3½" diskette	3.3 88 sec	0.33
QL+SOLUTION	3½" diskette	4.01 95 sec	0.31
TEST 3: TYPE a floppy file to screen			
PC		29 sec	1.00
QL+CONQUEROR		61 sec	0.48
QL+SOLUTION		70 sec	0.41
TEST 4: Scroll 120 lines on QEDIT word processor			
PC		96 sec	1.00
QL+CONQUEROR		115 sec	0.83
QL+SOLUTION		128 sec	0.75
TEST 5: 1000-line FOR...NEXT loop in GW-BASIC			
PC		2.4 sec	1.00
QL+CONQUEROR		16 sec	0.15
QL+SOLUTION		39 sec	0.06
TEST 6: Display 10x61 character strings			
PC		5 sec	1.00
QL+CONQUEROR		28 sec	0.18
QL+SOLUTION		44 sec	0.11
TEST 7: C&T v1.20 General Instructions			
PC			1.00
QL+CONQUEROR			0.60
QL+SOLUTION			0.13
TEST 8: C&T v1.20 Integer Instructions			
PC			1.00
QL+CONQUEROR			0.82
QL+SOLUTION			0.22
TEST 9: C&T v1.20 Memory to Memory			
PC			1.00
QL+CONQUEROR			0.54
QL+SOLUTION			0.15
TEST 10: C&T v1.20 Register to Register			
PC			1.00
QL+CONQUEROR			0.81
QL+SOLUTION			0.21
TEST 11: C&T v1.20 Register to Memory			
PC			1.00
QL+CONQUEROR			0.50
QL+SOLUTION			0.12
TEST 12: C&T v1.20 Overall Performance			
PC			1.00
QL+CONQUEROR			0.60
QL+SOLUTION			0.15

under the ST/QL emulator.

When used in its simplest way, Conqueror can read, write and format PC discs directly. Those same discs can then be, and could have originally been, read

from, written to and formatted by a PC.

A multi-tasking QL utility called *Xover* is supplied free with Conqueror to increase system flexibility further. *Xover* can read, write and format QL, PC and even

ST-TOS and RAMdiscs directly from Qdos but its main use is to permit automatic, both-ways, file-level transfer of data between QL-format and PC-format discs. No cables are involved. Xover's functionality is similar to that of the PDQL's *Discover*.

Xover allows you to move your data files or even source programs from PC to QL or vice versa. If you want to move your data base files from QL Archive to a PC database - PC4, dBase - you can save them as export files and transfer them using Xover. You can also use Xover to transfer across the PD software supplied on the Conqueror disc.

Alternatively, if you have realised that no equivalent for *The Editor* exists on the PC you may choose to use Xover to route PC word processing or other data or even binary files to QL-format devices for Editor treatment; that done, you transfer the amended files back. The possibilities are numerous.

Conqueror can cope with a variety of disc formats and sizes. Even if all you have is a non-switchable 80-track 5.25in. drive, you can still read 40-track 5.25in. discs on it. You need not stick to MS-DOS approved combinations.

Conqueror can be customised to suit preference, application and requirement. Both the Configurator and the on-line Supervisor/help controls are better equipped than those of Solution.

Conqueror seems to have all the desirable features of Solution. Its most important new feature is that it can create a PC environment on any QL-formatted drive, preferably a hard disc because of speed and size or RAMdisc because of speed, but even floppy or, for the real masochist, microcartridge. The size of the environment - the size of the file - as well as its name and location is selectable by the user.

The whole environment thereafter is

- (a) All the PC speeds are as for a 4.77MHz IBM PC clone (SI=1.0). QL tests were performed with a 768K v1.27 Trumpcard interface.
- (b) MS-DOS version number is quoted only where there is a material difference in timings between v3.3 and v4.01. DR-DOS - by Digital Research - was also tried; timings were in close agreement with those of MS-DOS v3.3.
- (c) No accelerator system was used on the QL for any of the reported timings. If you used *Lightning*, timings for the QL were often improved by 10 percent.
- (d) *Minerva* v1.66 was tried for various tests; it neither caused any problems nor had any material effect on timings.
- (e) Both Solution and Conqueror were configured to run with "Timer interrupts enabled", the recommended setting. Disabling timer interrupts gains some speed - a little more with Solution than with Conqueror - but loses somewhat in compatibility. To give but one example, BREAK will not work in GW-Basic programs if you disable Timer interrupts.
- (f) The QL/ST Emulator worked perfectly with both Solution and Conqueror, accelerating the operation of each PC emulator by 2.3 to 2.7 times - except for disc formatting, which is almost unaccelerated. The same large improvement could be expected with the Thor XVI; earlier Thors, except the 68020 version, are only marginally faster than QLs, with which Conqueror works well.
- (g) Conqueror can work with any make of QL or Thor hard disc. Only the Miracle hard disc was available for this test. To date, it is the only hard disc which can work with a fully-expanded, i.e. 896K Trumpcard-based system. As other hard discs use the expansion port rather than the ROM socket, they are likely to give slightly better speeds with Conqueror.
- (h) Results for tests 7 to 12 have been generated using the Chips & Technology benchmark, which represents a middle ground in estimating emulator speeds. *PC Tools* can give better figures and Norton is more conservative.
- (i) Conqueror allows the user to fine-tune performance by setting priorities, three "magic" numbers which can be adjusted both at configuration and run-times. There is guidance in the Conqueror documentation on how to judge what combination of values gives the best results. The theory is that for optimum performance from any particular PC program - be it database, spreadsheet, word processor, desk-top publisher, graphics utility, language or whatever - you should select job priorities to maximise execution speed. In practice, it is easy to choose suitable values and you do not have to bother about having them absolutely correct with some of the PC application programs tried with Conqueror as part of this review. Job priorities could be varied over a range without significant change in speed; with many others, execution speed was fast enough already.
- (j) The default priority values supplied seem sensible and all tests were performed with no adjustment made to them. Many of the test results for Conqueror could have been significantly accelerated by judicious selection of priorities. The results for Test 12, which is an average for tests 7 to 11, with Text idle priority set to 4, 3, 2 and 1 were 0.88x, 1.19x, 1.79x and 3.6x the speed of a PC respectively, which is good if not representative.
- (k) As with Solution, Conqueror refreshes the display periodically; it is done by a separate, multi-tasking screen job. With Conqueror, you can vary the frequency of updating. A lower frequency allows the CPU more time to perform the main job, yielding faster execution. It would also have yielded noticeably less smooth screen activity; except for an innovation the frequency of updating is raised temporarily when Conqueror detects an operation which could involve the screen. This way you get the best of both worlds.

FUNCTION	DEFAULT	SET BY CONFIGURATOR	SET AT RUN-TIME
Memory allocation.....	667 K	Y	*
QL Disk numbers.....	FLP1 + FLP2	Y	
Drive to boot-up.....			Y
Use one or two drives.....			Y
DOS Timer interrupts.....	Enabled	Y	*
Job Priority - Idle graphics.....	10	Y	*
Idle text.....	6	Y	*
Search priority after BIOS calls.....	32		
COM1 + Printer set.....	Ser1 & Ser2	Y	*
Error and warning messages.....	Enabled	Y	*
Disk specification.....	As set	Y	
Direct keyboard interrupts.....	Disabled	Y	*
Fast floppy formatting.....	Enabled	Y	*
Screen border colour.....	128	Y	
Key definitions from separate file...		Y	
Key mapping editing.....		Y	
Supervisor mode call-up key.....	SHIFT/CTRL		
	ALT/CAPSLOCK	Y	
MS-DOS control/break key.....	CTRL/ESC	Y	
MS-DOS printscreen key.....	CTRL/SHIFT/P	Y	
MS-DOS scroll-lock key.....	CTRL/SHIFT/S	Y	
Hard disk MS-DOS file size.....	6800k	Y	
Hard disk MS-DOS file name.....	win1 MSDOS	Y	

Y = Can be configured
* = Reconfiguration possible; otherwise default is configurator's setting.

treated by the QL like a single Qdos file which can be copied using SuperBasic. From within Conqueror the QL file is invisible; all you are aware of is a C: drive which can be formatted and accessed like any other PC drive. You can even arrange to boot your PC from this drive.

If you have a single floppy drive, plenty of RAM or a hard disc, this superb feature, more flexible than partitioning, allows you to share QL disc space between one or more PC environments - which may be partitioned - and other "ordinary" Qdos files.

Like Solution, Conqueror permits multi-tasking of PC programs, which is something "real" PCs do not yet do. You can also multi-task PC programs together with QL ones, RAM permitting. The faster speed of Conqueror makes those options far more attractive to the serious user.

While on the subject of RAM, Conqueror is almost exactly the same size as Solution - if anything, Conqueror is smaller. On my Trumpcard-equipped QL,

```

EXE2BIN  EXE      7963 04-07-89  12:00a
FC       EXE     15807 04-07-89  12:00a
FDISK   EXE     60935 04-07-89  12:00a
FIND    EXE      5
FORMAT COM     22
GJBASIC EXE     80
JOIN    EXE     17
LABEL  COM      4
LINK   EXE     43
MEM    EXE     20
MODE   COM     22
MORE   COM      2
PRINT  COM     14
PRINTER SYS    18
RAMDRIVE SYS    8
README TXT     13
REPLACE EXE     13
SORT   EXE     13
SUBST  EXE     13
SYS    COM     11
TREE   COM     11
XCOPY  EXE     11
36 File(s) 50176 bytes free

```

with no hard disc connected, there was up to 667K available for use by the PC operating system and at least 68K available for Qdos. There was a 1:1 trade-off between these two areas, as you might expect.

I was free to allocate as much space for the PC operating system as I wished up to a limit of 667K. As very few PCs have more than 640K, and as PC MS-DOS is reluctant to utilise more than 640K as contiguous RAM, the limit of 667K is no constraint.

The RAM "outside" the area allocated to the PC operating system can be used as RAMdisc(s) by Conqueror. Of course, conventional DOS RAMdiscs are also supported exactly as they would be on a PC, occupying space in the PC operating

system area. Both types of RAMdisc are several times faster than floppy.

I have been careful to use the terms PC program and PC operating system, rather than MS-DOS program and MS-DOS. That is because while the overwhelming majority of Conqueror users will be running MS-DOS, Conqueror is compatible with other PC operating systems, including DR-DOS, CP/M86, p-system and Xenix, among others. DP offers a technical support service for Conqueror users.

The Conqueror manual does not pretend to be an MS-DOS tutor, but it goes a long way to get you started. It is exceptional in that it contains a fair amount of PC-relevant information, set out in a jargon-free way, and includes many useful tables. The trouble-shooting

section – have you remembered to set the baud rate? – is particularly useful.

As any discerning reader will have concluded, PC Conqueror is significantly faster, more powerful and more PC-compatible than Solution and represents a very worthwhile purchase for all levels of user. Conqueror accepted everything with which I tested it. Some types of PC programs, because of their size, function better on the QL/Conqueror, as they do on PCs, with hard disc storage than with floppy. A few PC programs, such as AutoCAD make a hard disc almost mandatory. Having said that, though, the more persevering will be able to run almost anything.

Public domain software, usually available for about the price of the floppy disc on which it is recorded, offers you thousands of useful programs and utilities. Commercial PC software is experiencing a revolutionary metamorphous in which the distinction between a program type is becoming less well-defined. Programs often include features found in other program types, giving you the best features found in each.

e-mulation *n* 1 the act of emulating or imitation.

con+quer+or *n* 2. one who overcomes an obstacle.

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QL UCKERS by B. Otridge

```
10 REMark : QL_UCKERS is an implementation of the well-known board
20 REMark : game LUDO, otherwise known as FRUSTRATION or UCKERS.
30 REMark : The game is self-documenting, and can be played with 2-4
40 REMark : players. The QL can act as any or all of the players.
50 :
60 REMark : PROGRAM ONE: Save under filename 'boot'
70 REMark : Substitute desired device in merge statement in line 90
80 WINDOW#0, 512,256,0,0:MODE 8:PAPER#0,0:CLS#0:WINDOW 448,200,32,16:PAPER 0:INK
 5:CSIZE 3,1:CLS:AT 5,5:PRINT "Loading QL_UCKERS"
90 MERGE f1p1_uckers_bas
```

```
10 REMark : *****
20 REMark : ***      QL_UCKERS      ***
30 REMark : ***          by          ***
40 REMark : ***      B Otridge      ***
50 REMark : *** save as uckers_bas ***
60 REMark : *****
70 :
80 REMark : *** INITIALISATION SEQUENCE ***
90 :
100 CLS:CLEAR:MODE 8:PRINT "Running QL_UCKERS":RANDOMISE DATE:cc=1:q#=CHR$(10):D
IM bin%(6):FOR n=1 TO 6:bin%(n)=2^(n-1)
110 :
120 DATA "QL","One","Two","Three":REMark default player names
130 RESTORE 120:DIM pn$(3,6):FOR n=0 TO 3:READ pn$(n)
140 :
150 DATA 20,20,56,50,20,32,80,20,62,50,50,21,80,80,56,50,80,32,20,80,62,1021:REMark
dice
160 RESTORE 150:DIM dice%(7,3):t=0:FOR n=1 TO 7
170   FOR m=1 TO 3:READ i:dice%(n,m)=i:t=t+i
180 END FOR n:READ i:IF i>t:PRINT "Error in dice data":STOP
190 :
200 DATA 2,2, 2,3, 2,4, 2,5, 2,6, 2,7, 2,8, 2,9, 3,9, 4,9, 5,9, 6,9, 7,9, 8,9, 9
,9, 9,8, 9,7, 9,6, 9,5, 9,4, 9,3, 9,2, 8,2, 7,2, 6,2, 5,2, 4,2, 3,2, 308:REMark
Stored in CIRC%
210 REMark : circ%(n,1) = y location of circuit hole
220 REMark : circ%(n,2) = x location of circuit hole
230 DIM circ%(27,2): t=0:FOR n=0 TO 27:READ i,j: t=t+i+j:circ%(n,1)=i:circ%(n,2)
=j
240 READ i:IF i>t:PRINT "Error in circuit data":STOP
250 :
260 DATA 0,0, 0,1, 1,1, 1,0, 4:REMark Stored in STARTS%
270 REMark : starts%(n,1) = y location for start hole
280 REMark : starts%(n,2) = x location for start hole
290 DIM starts%(3,2):t=0:FOR n=0 TO 3:READ i,j:t=t+i+j:starts%(n,1)=i: starts%(n
,2)=j
300 READ i:IF i>t:PRINT "Error in starts data":STOP
310 :
320 DATA 2.9, 2.9, 3.6, 3.6, 4.3, 4.3, 5, 5:REMark home 0
330 DATA 2.91, 8.1, 3.61, 7.4, 4.31, 6.7, 5.01, 6:REMark home 1
340 DATA 8.1, 8.1, 7.4, 7.4, 6.7, 6.7, 6, 6:REMark home 2
350 DATA 8.11, 2.9, 7.41, 3.6, 6.71, 4.3, 6.01, 5, 1760:REMark home 3
360 REMark : homes(n,m,1) = y location: homes (n,m,2) = x location
370 REMark : n = homes for each player, m = holes of each home
380 DIM homes(3,3,2):t=0:FOR n=0 TO 3
390   FOR m=0 TO 3:READ i,j:homes(n,m,1)=i:homes(n,m,2)=j:t=t+i+j
400 END FOR n:READ i:IF i>INT(.1+t*10):PRINT "Error in homes data":STOP
410 :
420 CLOSE#1:CLOSE#2:FOR n=1 TO 10:OPEN#n,con_512x256a0x0:CLS#n
430 board:rules
440 :
```

```

450 :
1000 REMark : *** GAMES LOOP *** The main loop controlling each game
1010 :
1020 REPEAT games
1030   initgame
1040   game_end=0
1050   REPEAT goes:one_go:IF game_end:EXIT goes
1060   prin "Game has ended, points awarded: 2 for each piece home, 1 for each o
n the circuit: "&q#
1070   hi=0:hp=0:FOR m=0 TO 3
1080     i=0:FOR n=0 TO 3:i=i+pstat%(m,n,0)
1090     IF pn$(m)<>"":prin pn$(m)&" = "&i:IF i>hi:hi=i:hp=m
1100   END FOR m:STRIP 0:INK 7:prin q#&"Winner is "&pn$(hp):INK 0:STRIP 6
1110   prinw "Play another game? (Y)es or (N)o"
1120   IF i$=="n":EXIT games
1130 END REPEAT games
1140 ende:STOP
1150 :
1160 :
6000 REMark : *** INITGAME *** Controls the initialisation of each game
6010 :
6020 DEFINE PROCEDURE initgame
6030 players:REPEAT sel_plyrs
6040   prinw "Is the next game with the players above? (Y)es or (N)o":IF i$=="y"
:EXIT sel_plyrs
6050   REPEAT inp_plyrs
6060     players:prin "Input new names under existing ones. Input SPACES to del
ete a player. Press ENTER to keep a player. Computer plays if 1st 2 letters of
name are 'QL'"
6070     FOR n=0 TO 3:CURSOR 8+82*starts%(n,2),22+30*starts%(n,1):INPUT i$:IF i$
<>"":pn$(n)=i$
6080     AT 8,0:CLS 3:CLS 2
6090     c=0:er=0:FOR n=0 TO 3
6100       pn$(n)=pn$(n)&"      ":pn$(n)=pn$(n,1 TO 6)
6110       IF pn$(n)="      ":pn$(n)="":ELSE :c=c+1
6120       IF pn$(n)<>"":FOR m=0 TO n-1:IF pn$(n)=pn$(m):er=1
6130     END FOR n
6140     IF c<2:er=2:players:prinw "Must have more than one player"
6150     IF er=0:EXIT inp_plyrs:ELSE :IF er=1:players:prinw "Duplicate names not
allowed"
6160   END REPEAT inp_plyrs:players
6170 END REPEAT sel_plyrs:board
6180 CLS:prinw "Now throw dice to find first player":plyr=0:ht%=0
6190 FOR n=0 TO 3
6200   IF pn$(n)<>""
6210     tdice n:IF d1>ht%:plyr=n:ht%=d1%:prin "Highest throw so far":IF ht%=6:
CLS:prin pn$(plyr)&"'s '6' is unbeatable and goes first.":EXIT n
6220   prinw "":PAPER#n+7,n*2:CLS#n+7:END IF :NEXT n
6230   prin "Player "&pn$(plyr)&" threw a "&ht%&" and goes first."
6240 END FOR n
6250 prin q#&"Remember that a SIX is needed to get a peg started.":prin q#&"Pres
s CTRL+Q on dice throw to quit.":prinw q#&"If program stops, bottom window lifts
; type 'ende' to restore screen"
6260 END DEFINE initgame
6270 :
6280 :
7000 REMark : *** ONE_GO *** Controls a single move
7010 :
7020 DEFINE PROCEDURE one_go
7030 :
7040 REMark : PGSTAT% records details of possible peg moves on each go.
7050 REMark : pgstat%(n,0 to 2) where n is peg number (0 to 3)
7060 REMark : pgstat%(n,0) = possible hole type: 0=start, 1=circ, 2=home
7070 REMark : pgstat%(n,1) = hole no (0-3) home/start (0-27) circuit
7080 REMark : pgstat%(n,2) = ranking of possible move (3-13), 0 = no move
7090 DIM pgstat%(3,2)
7100 :
7110 flashname 1:tdice plyr:best_move=0:best_score=0:no_choices=0:start_ok=0:IF
d1%=6: sbop=(cstat%(plyr*7,1) AND cstat%(plyr*7,0)<>plyr):IF sbop OR cstat%(plyr
*7,1)=0:start_ok=1
7120 IF game_end=1:flashname 0:RETURN
7130 FOR n=0 TO 3
7140   h=pstat%(plyr,n,0):i=pstat%(plyr,n,1):j=i+d1%:SElect ON h
7150   ON h=0
7160     IF start_ok:poss_moves 1,plyr*7,8+5*(sbop):start_ok=0

```

P+ROGS

```

7170     ON h=2
7180     IF j<4:IF hstat%(plyr,j)=0:poss_moves 2,j,3
7190     ON h=1
7200     pp=plyr*7:IF pp=0:pp=28
7210     IF i<pp AND j>=pp
7220     j=j-pp:IF j<4:IF hstat%(plyr,j)=0:poss_moves 2,j,7
7230     ELSE
7240     IF j>=28:j=j-28
7250     bop=(cstat%(j,1) AND cstat%(j,0)<>plyr):IF bop OR cstat%(j,1)=0:pos
s_moves 1,j,5+5*(bop)+(i MOD 7=0 AND pn$(INT(i/7))<>"")-(j MOD 7=0 AND pn$(INT(j
/7))<>"")
7260     END IF
7270 END SElect :END FOR n
7280 a$=" Best move ":IF no_choices=1:a$=" Only move "
7290 STRIP#2,plyr*2:STRIP#plyr+3,plyr*2:INK#2,5*(plyr<2):INK#plyr+3,5*(plyr<2):p
rin "Possible moves:":flashnos 1
7300 IF no_choices
7310 IF pn$(plyr,1 TO 2)="QL" OR no_choices=1
7320 prin "Doing the"&a$:sel_move=best_move:i=KEYROW(0):PAUSE 150
7330 ELSE
7340 prin "Please choose your move":REPEAT xx:i=KEYROW(0):i$=INKEY$(-1):i="0
"&i$:i=i-1:IF i<0 OR i>3:prin "Wrong key, try again":ELSE :IF pgstat%(i,2):sel_m
ove=i:EXIT xx:ELSE :prin "You can't use "&(i+1)
7350 END IF
7360 CLS:flashname 0:flashnos 0
7370 h=pstat%(plyr,sel_move,0):i=pstat%(plyr,sel_move,1):j=pgstat%(sel_move,1)
:k=pgstat%(sel_move,0):pstat%(plyr,sel_move,0)=k:pstat%(plyr,sel_move,1)=j:SElec
t ON h
7380 =0:sstat%(plyr,i)=0:circs plyr,i
7390 =1:cstat%(i,1)=0:circc i
7400 =2:hstat%(plyr,i)=0:circh plyr,i
7410 END SElect
7420 SElect ON k
7430 ON k=1
7440 g=cstat%(j,1):bopped=cstat%(j,0):IF g:cstat%(j,1)=0:circc j:sstat%(bo
pped,g-1)=g:circs bopped,g-1:pstat%(bopped,g-1,0)=0:pstat%(bopped,g-1,1)=g-1:pri
n pn$(bopped)&" has been bopped!":i=KEYROW(0):PAUSE 150
7450 cstat%(j,1)=sel_move+1:cstat%(j,0)=plyr:circc j
7460 ON k=2
7470 hstat%(plyr,j)=sel_move+1:circh plyr,j
7480 END SElect
7490 ELSE
7500 STRIP 0:INK 6:prin ":NONE":STRIP 6:INK 0:i=KEYROW(0):PAUSE 75:CLS:flashna
me 0
7510 END IF
7520 PAPER#plyr+7,plyr*2:CLS#plyr+7
7530 i=0:FOR n=0 TO 3:i=i+(pstat%(plyr,n,0)=2)
7540 IF i=4:game_end=1
7550 IF d1<>6:REPEAT x:plyr=plyr+1-4*(plyr=3):IF pn$(plyr)<>"":EXIT x
7560 END DEFine one_go
7570 :
7580 :
8000 Remark : *** RULES *** Prints the rules
8010 :
8020 DEFine PROCedure rules
8030 CLS:prinw "Do you want to see the game's rules? (Y)es or (N)o ":IF i$=="n":
RETURN
8040 prinw "The object is to move your 4 men, starting from one corner, once rou
nd the circular track, to bring them home to the centre. During the game, you t
ry to 'bop' your opponents, sending their men back to their starting corners."
8050 prinw "You will first be asked to name and locate up to 4 players: the comp
uter may operate one or more of them. Then each player will 'throw' the dice: t
he highest goes first. Note that in the game, a throw of '6' gives you another
go."
8060 prinw "You must throw a '6' before moving a man onto the hole marked 's' by
your start base. Men move clockwise, jumping over opponent's or your other men
. If you land on a hole occupied by an opponent's man he is 'bopped' back to h
is start area."
8070 prinw "If more than one legal move is possible, you must decide which man t
o move, the computer suggesting the 'best move' it would use: however the comput
er's logic is limited. To finish, men are moved into the centre, using only exa
ct throws to occupy empty spaces."
8080 prinw "The winner is the first to occupy all the finish holes. Other player
s are credited with a score depending how well they have advanced. Enjoy playin
g the game!":END DEFine

```



```

8090 :
8100 :
9000 REMark *** BOARD *** Draws a fresh board
9010 :
9020 DEFine PROCedure board
9030 setw 0,512,32,0,224,3,0,7,1:setw 1,180,244,0,0,2,6,0,2:setw 1,170,240,5,2,2
,6,0,0:prin "Setting up playing board, please wait":setw 2,332,244,180,0,2,3,7,2
:AT#0,2,12:PRINT#0,"@L-UCKERS"
9040 :
9050 REMark : CSTAT% = Status of circuit holes.
9060 REMark : cstat%(n,0) is number of player occupying hole
9070 REMark : cstat%(n,1) is peg no (1-4) occupying hole, 0 = empty
9080 DIM cstat%(27,1):FOR n=0 TO 27:circ n
9090 :
9100 REMark : HSTAT% = Status of home holes.
9110 REMark : hstat%(n,m) where n is player no, and m is hole no
9120 REMark : hstat% values: 1-4 = player's peg no, 0 = empty
9130 DIM hstat%(3,3)
9140 :
9150 REMark : SSTAT% = Status of start holes.
9160 REMark : sstat%(n,m) where n is player no, and m is hole no
9170 REMark : sstat% values: 1-4 = player's peg no, 0 = empty
9180 DIM sstat%(3,3)
9190 :
9200 REMark : PSTAT% = Status of player.
9210 REMark : pstat%(n,m,0 and 1) where n is player no, m is peg no
9220 REMark : pstat%(n,m,0) hole type occupied: 0: start, 1: circ, 2:home
9230 REMark : pstat%(n,m,1) hole no occupied (0-3, start/home)(0-27, circ)
9240 DIM pstat%(3,3,1):FOR n= 0 TO 3
9250 setw n+3,133,40,182+194*starts%(n,2),2+200*starts%(n,1),2,(n)*2,5*(n<2),1
:setw n+7,54,40,182+274*starts%(n,2),42+120*starts%(n,1),2,(n)*2,7*(n<2),1
9260 IF pn$(n)<>"":CURSOR#n+3,55,9:PRINT#n+3,"Player":CURSOR#n+3,55,21:PRINT#n
+3,pn$(n)
9270 SElect ON n
9280 =0:FILL#2,1:INK#2,0:LINE#2,25,75 TO 33,75 TO 50,58 TO 50,50 TO 42,50 TO
25,67 TO 25,75:FILL#2,0
9290 =1:FILL#2,1:INK#2,2:LINE#2,75,75 TO 67,75 TO 50,58 TO 50,50 TO 58,50 TO
75,67 TO 75,75:FILL#2,0
9300 =2:FILL#2,1:INK#2,4:LINE#2,75,25 TO 67,25 TO 50,42 TO 50,50 TO 58,50 TO
75,33 TO 75,25:FILL#2,0
9310 =3:FILL#2,1:INK#2,6:LINE#2,25,25 TO 33,25 TO 50,42 TO 50,50 TO 42,50 TO
25,33 TO 25,25:FILL#2,0
9320 END SElect
9330 FOR m= 0 TO 3
9340 IF pn$(n)<>"":sstat%(n,m)=m+1:pstat%(n,m,1)=m
9350 circh n,m:circs n,m:END FOR m
9360 END FOR n
9370 END DEFine board
9380 :
9390 :
10000 REMark : *** POSS_MOVES *** Records details of possible moves
10010 :
10020 DEFine PROCedure poss_moves (g,h,i): pgstat%(n,0)=g:pgstat%(n,1)=h:pgstat%
(n,2)=i:no_choices=no_choices+1:IF i>best_score:best_score=i:best_move=n
10030 END DEFine
10040 :
10050 :
10060 REMark : *** CIRCH *** Sets up CIRCP for a hole or peg in home area
10070 :
10080 DEFine PROCedure circh (plyr,hole):x=homes(plyr,hole,2):y=homes(plyr,hole,
1):pegno=hstat%(plyr,hole):IF pegno:color=2*plyr:ELSE :color=7
10090 circp:END DEFine
10100 :
10110 :
10120 REMark : *** CIRCC *** Sets up CIRCP for hole or peg on circuit
10130 :
10140 DEFine PROCedure circc (hole):x=circ%(hole,2):y=circ%(hole,1):pegno=cstat%
(hole,1):IF pegno:color=2*cstat%(hole,0):ELSE :color=7
10150 circp :END DEFine
10170 :
10180 :
10190 REMark : *** CIRCP *** Draws a hole or peg on the board
10200 :
10210 DEFine PROCedure circp:LOCAl xx,yy:INK#2,color:FILL#2,1:xx=8.33*x+4.16:yy=
8.33*(12-y)-4.16:CIRCLE#2, xx,yy,3.8:FILL#2,0:INK#2,5*(color<3):CIRCLE#2,xx,yy,3

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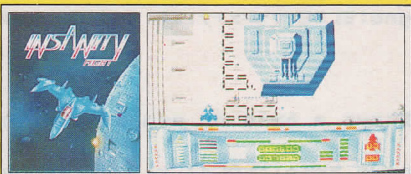
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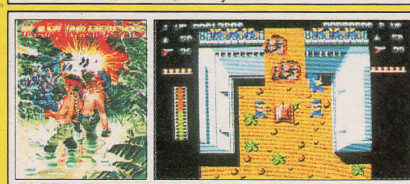
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```

.8:CURSOR#2,6+27.16*x,5+20*y:STRIP#2,color
10220 IF color<>7:PRINT#2,pegno:ELSE :x=x+y:IF x=4 OR x=11 OR x=18:PRINT#2,"S"
10230 END DEFine
10240 :
10250 :
10260 REMark : *** CIRCS ***  Draws a hole or peg in the start area
10270 :
10280 DEFine PROCedure circs (plyr,hole):LOCAL x,y,xx,yy,ch,pegno:x=starts%(hole
,2):y=starts%(hole,1):pegno=sstat%(plyr,hole):IF pegno:color=2*plyr:ELSE :color=
7
10290 ch=plyr+3:xx=50*x+25:yy=50*(1-y)+25:INK#ch,color:FILL#ch,1:CIRCLE#ch,xx,yy
,23:FILL#ch,0:INK#ch,5*(plyr<2):CIRCLE#ch,xx,yy,23:IF pegno:CURSOR#ch,27*x+6,18*
y+5:PRINT#ch,pegno
10300 END DEFine
10310 :
10320 :
10330 REMark : *** PLAYERS ***  Displays current players
10340 :
10350 DEFine PROCedure players:CLS:LINE 2,71 TO 52,71 TO 52,97 TO 2,97 TO 2,71:L
INE 2,84 TO 52,84:LINE 27,71 TO 27,97
10360 FOR n=0 TO 3:CURSOR 8+82*starts%(n,2),12+30*starts%(n,1):PRINT pn$(n)
10370 AT 8,0:END DEFine
10380 :
10390 :
10400 REMark : *** FLASHNAME ***  Flash on/off current player
10410 :
10420 DEFine PROCedure flashname (f): FLASH#2,f:FLASH#plyr+3,f:CURSOR#plyr+3,55,
21:PRINT#plyr+3,pn$(plyr):END DEFine
10430 :
10440 :
10450 REMark : *** FLASHNOS ***  Highlights possible moves (on or off)
10460 :
10470 DEFine PROCedure flashnos (f)
10480 STRIP 0:INK 7:FOR n=0 TO 3
10490   IF pgstat%(n,2)
10500     i=pstat%(plyr,n,0):j=pstat%(plyr,n,1):SElect ON i
10510     =0:flashno starts%(n,2),starts%(n,1),plyr+3
10520     =1:flashno circ%(j,2),circ%(j,1),2
10530     =2:flashno homes(plyr,j,2),homes(plyr,j,1),2
10540   END SElect :IF f:PRINT " ";n+1:IF n=best_move:PRINT a#:ELSE :PRINT
10550   END IF
10560 END FOR n:STRIP 6:INK 0:END DEFine
10570 :
10580 :
10590 REMark : *** FLASHNO ***  Turns Flash on/off for a given peg number
10600 :
10610 DEFine PROCedure flashno (x,y,ch):CURSOR#ch,6+x*(27+.16*(ch=2)),5+y*(18+2*
(ch=2)):PRINT#ch,n+1:END DEFine
10620 :
10630 :
10640 REMark : *** TDICE ***  Controls the throw of a dice
10650 :
10660 DEFine PROCedure tdice (plyr):LOCAL n,oface%(1,7),ch
10670 CLS:prin pn$(plyr)&" press SPACE BAR to shake dice."
10680 ch=plyr+7:PAPER#ch,7:INK#ch,0:CLS#ch
10690 IF pn$(plyr,1 TO 2)<>"QL":REPeat x:IF KEYROW(1)=64:EXIT x:ELSE :IF KEYROW(
7)=2 AND KEYROW(6)=8:game_end=1:EXIT x
10700 PRINT q#&"Let go to"&q#&"throw dice":exx=0:REPeat x
10710   d1%=RND(1 TO 6):face ch,d1%,oface%(0):IF exx
10720   prin d1%&" thrown by "&pn$(plyr):RETURN
10730   ELSE
10740     IF pn$(plyr,1 TO 2)="QL"
10750       IF RND(0 TO 1):CLS:exx=1
10760     ELSE
10770       IF KEYROW(1)<>64:CLS:exx=1
10780     END IF
10790   END IF
10800 END REPeat x
10810 END DEFine
10820 :
10830 :
10840 REMark : *** FACE ***  Prints dice face to match throw
10850 :
10860 DEFine PROCedure face (w%,x%,o%):LOCAL cx%,n
10870 FOR n=1 TO 7

```

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10880 FILL#w%,1:IF (dice%(n,3) && bin%(x%))
10890 IF o%(n)=0:INK#w%,0:CIRCLE#w%,dice%(n,1),dice%(n,2),9
10900 o%(n)=1
10910 ELSE :IF o%(n):INK#w%,7:CIRCLE#w%,dice%(n,1),dice%(n,2),9
10920 o%(n)=0
10930 END IF :FILL#w%,0
10940 END FOR n:END DEFine
10950 :
10960 :
10970 REMark : *** SETW *** Sets up a window and its parameters
10980 :
10990 DEFine PROCedure setw (ch,wi,de,x,y,cs,pa,in,bo):WINDOW #ch,wi,de,x,y:CSIZ
E#ch,cs,0:PAPER#ch,pa:CLS#ch:INK#ch,in:BORDER#ch,bo,0,6:END DEFine
11000 :
11010 :
11020 REMark : *** PRIN *** Prints text with word-wrap
11030 :
11040 DEFine PROCedure prin (d$):LOCAL s,n,c$
11050 c#=d#&" ":REPEAT n:s=" " INSTR c$:IF s AND c#<>" ":PRINT#cc;!c#(1 TO s-1)
;:c#=c#(s+1 TO LEN(c#)):ELSE :PRINT#cc;!c#:EXIT n
11060 END DEFine
11070 :
11080 :
11090 REMark : *** ENDE *** Allows screen to be re-set at end of program
11100 :
11110 DEFine PROCedure ende:setw 0,512,256,0,0,0,0,0:setw 1,168,30,172,170,2,7
,0,5:PRINT "F1...monitor"\ "F2...TV":REPEAT k:n=CODE(INKEY#(-1)):IF n>231:EXIT k
11120 FOR n=3 TO 10:CLOSE#n
11130 IF n=232:setw 0,512,50,0,206,0,0,6,0:setw 1,256,202,256,0,0,2,6,1:setw 2,2
56,202,0,0,6,0,1:MODE 4:ELSE :setw 0,448,40,32,216,2,0,7,0:setw 2,448,200,32,1
6,2,1,7,0:setw 1,448,200,32,16,2,2,7,0:MODE 8
11140 END DEFine
11150 :
11160 :
11170 REMark : *** PRINW *** Prints text using prin and waits for a key
11180 :
11190 DEFine PROCedure prinw (z$):LOCAL i:prin z#&" "&q#&"Press a key. ":i=KEYRO
W(0):i#=INKEY#(-1):CLS#cc:END DEFine
11200 :
11210 :
11220 REMark :end of program

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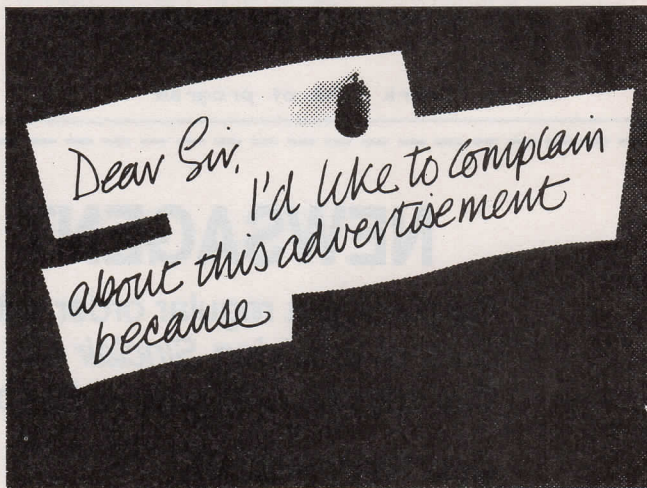
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```

100 REMark *****
101 REMark * T I G E R *
102 REMark *****
103 REMark * Thomas Menschel *
104 REMark * Berlin 1990 *
105 REMark *****
106 REMark Please update line 108
107 REMark if you use an other device
108 dev$='flp1_'
109 :
110 MODE 4
111 read_highscore
112 REPEAT game
113   init
114   REPEAT loop
115     FOR x=1 TO tb
116       db=you_move
117       IF db=0 : EXIT loop
118     END FOR x
119     FOR x=1 TO db
120       tb=tiger_move
121       IF tb=0 : EXIT loop
122     END FOR x
123   END REPEAT loop
124   IF end_of_game=0 : EXIT game
125 END REPEAT game
126 write_highscore
127 restore_window
128 STOP
129 :
130 DEFINE PROCEDURE init
131 LOCAL loop,n,m,a
132 WINDOW 512,256,0,0 : PAPER 2 : CLS
133 WINDOW 210,138,40,20 : PAPER 0 : CLS
134 WINDOW 210,138,47,13
135 PAPER 4 : CLS : BORDER 1,0
136 INK 0 : CSIZE 2,0
137 PRINT ' G A M E P A D'
138 a=3 : tb=1
139 FOR n=1 TO 10
140   FOR m=1 TO 10
141     OPEN #a,scr_
142     WINDOW #a,20,12,32+20*m,16+12*n
143     PAPER #a,6 : BORDER #a,1,0
144     INK #a,0 : CLS #a : CSIZE #a,2,0
145     a=a+1
146   END FOR m
147 END FOR n
148 WINDOW 400,55,40,180
149 PAPER 0 : CLS
150 WINDOW 400,55,47,173 : INK 0
151 PAPER 4 : BORDER 1,0 : CLS : CSIZE 2,0
152 PRINT'Jump = SPACE '
153 PRINT CHR$(188)&CHR$(190)&CHR$(191)&CHR$(189);
154 PRINT ' = CURSOR'
155 PRINT FILL$('-',33)
156 z=0 : s=5 : max1=5
157 PRINT'only ' ; s ; ' jumps      Points = ' ; z
158 PRINT FILL$('-',33)
159 PRINT' 0 = Hole X = Tiger '&CHR$(183)&' = You'
160 DIM l(max1)
161 FOR n=1 TO max1
162   l(n)=RND(3 TO 102)
163   PRINT #l(n),'0'
164 END FOR n
165 REPEAT loop
166   t=RND(3 TO 102)
167   FOR n=1 TO max1 : IF t=l(n) : NEXT loop
168   PRINT #t,'X' : EXIT loop
169 END REPEAT loop
170 REPEAT loop
171   d=RND(3 TO 102)
172   FOR n=1 TO max1 : IF d=l(n) : NEXT loop
173   IF d=t : NEXT loop
174   PRINT #d,CHR$(183) : EXIT loop
175 END REPEAT loop
176 END DEFINE
177 :
178 DEFINE FUNCTION you_move
179 LOCAL loop,n,d1,a
180   d1=d-3
181   dx=d1 MOD 10 : dy=d1 DIV 10
182   REPEAT loop
183     a=KEYROW(1) : IF a>0 : EXIT loop
184   END REPEAT loop
185   SELECT ON a
186     =2 : dx=dx-1
187     =16 : dx=dx+1
188     =4 : dy=dy-1
189     =128 : dy=dy+1
190     =6 : dx=dx-1 : dy=dy-1
191     =20 : dx=dx+1 : dy=dy-1
192     =130 : dx=dx-1 : dy=dy+1
193     =144 : dx=dx+1 : dy=dy+1
194     =64
195     IF s=0
196       z=z-1
197     ELSE
198       BEEP 2000,255
199       dx=RND(9) : dy=RND(9)
200       s=s-1 : AT 2,5 : PRINT s
201       IF s=0 : AT 2,0 : PRINT' No more jumps
202     END IF
203   END SELECT
204   IF dx<0 : dx=0 : z=z-1
205   IF dx>9 : dx=9 : z=z-1
206   IF dy<0 : dy=0 : z=z-1
207   IF dy>9 : dy=9 : z=z-1
208   d1=(10*dy+dx)+3
209   BEEP 1000,100
210   CLS #d : PRINT #d1,CHR$(183)
211   z=z+1 : AT 2,26 : PRINT z : d=d1
212   FOR n=1 TO max1
213     IF l(n)=d : l(n)=0 : BEEP 2000,1 : RETURN 2
214   END FOR n
215   IF t=d : RETURN 0 : ELSE RETURN 1
216 END DEFINE
217 :
218 DEFINE FUNCTION tiger_move
219 LOCAL n,m,t1,a
220   FOR n=1 TO RND(1 TO 2)
221     t1=t-3
222     tx=t1 MOD 10 : ty=t1 DIV 10
223     a=0
224     IF tx>dx AND ty>dy : a=5
225     IF tx>dx AND ty<dy : a=7
226     IF tx<dx AND ty>dy : a=6
227     IF tx<dx AND ty<dy : a=8
228     IF tx=dx : IF ty<dy : a=3 : ELSE a=4
229     IF ty=dy : IF tx<dx : a=1 : ELSE a=2
230   SELECT ON a
231     =1 : tx=tx+1
232     =2 : tx=tx-1
233     =3 : ty=ty+1
234     =4 : ty=ty-1
235     =5 : tx=tx-1 : ty=ty-1
236     =6 : tx=tx+1 : ty=ty-1
237     =7 : tx=tx-1 : ty=ty+1
238     =8 : tx=tx+1 : ty=ty+1
239   END SELECT
240   IF tx<0 : tx=0
241   IF tx>9 : tx=9

```

Continued on Page 41

THE

P+R:O=G<S

If you have a program worthy of consideration, send it to 'The Progs', Sinclair QL World, Greencoat House, Francis Street, London SW1P 1DG. We pay for everything published at the usual page rates.

This little program is a 'French number tutor' — it will test knowledge of the French words for the numbers from 0 to 100. I wrote it for myself, since I am learning French, and I think other readers (and their chil-

dren) learning languages may find it of some use.

To load the program use the filename 'fnum', to run it use 'start'. The program is written for use on a monitor. It can be adapted for another data.

```

100 DEFine PROCedure start
110 OPEN #6,scr_509x228a2x2
120 PAPER #6,0:CLS #6
130 BORDER #6,5,4
140 INK #6,7:OVER #6,1:CSIZE #6,3,1
150 AT #6,0,6:PRINT #6,"French Number Tutor"
160 CSIZE #6,0,0
170 INK #6,2
180 AT #6,2,32:PRINT #6,"by Stewart Granger"
190 AT #6,20.49,24:PRINT #6,"For # use <ctrl><shift><3>"
200 CLOSE #6
210 OPEN #4,con_250x100a120x100
220 PAPER #4,7:CLS #4:INK #4,0
230 OPEN #7,scr_40x10a210x80
240 PAPER #7,7:CLS #7:INK #7,0
250 RESTORE
260 DIM word$(20,20)
270 FOR n = 1 TO 20
280   READ word$(n)
290 END FOR n
300 get_num
310 END DEFine start
320 :
330 DEFine PROCedure get_num
340 CLS #4:CLS #7
350 LET rnum = RND(0 TO 100)
360 get_answer(rnum)
370 END DEFine
380 :
390 DEFine PROCedure get_answer(num)
400 AT #7,0,1: PRINT #7,num
410 IF num <= 20 AND num <> 0 THEN
420   LET ans$ = word$(num)
430   get_input(ans$)
440 END IF
450 REMark for 21,31, etc
460 IF num MOD 10 = 1 AND num < 80 THEN special_cases(num)
470 REMark for 30, 40,etc
480 IF num MOD 10 = 0 THEN special_cases(num)
490 IF num > 21 AND num < 30 THEN
500   LET temp_num = num - 20
510   LET fst$ = "vingt-"
520   LET snd$ = word$(temp_num)
530   LET wd$ = fst$ & snd$
540   get_input(wd$)
550 END IF
560 IF num > 30 AND num < 40 THEN
570   LET fst$ = "trente-"
580   LET temp_num = num - 30
590   LET sd$ = word$(temp_num)
600   LET wd$ = fst$ & sd$
610   get_input(wd$)
620 END IF
630 IF num > 40 AND num < 50 THEN
640   LET fs$ = "quarante-"
650   LET temp_num = num - 40
660   LET sd$ = word$(temp_num)
670   LET wd$ = fs$ & sd$
680   get_input(wd$)
690 END IF
700 IF num > 50 AND num < 60 THEN
710   LET fs$ = "cinquante-"
720   LET temp_num = num - 50
730   LET sd$ = word$(temp_num)
740   LET wd$ = fs$ & sd$
750   get_input(wd$)
760 END IF
770 IF num > 60 AND num < 80 THEN
780   LET fs$ = "soixante-"
790   LET temp_num = num - 60
800   LET sd$ = word$(temp_num)
810   LET wd$ = fs$ & sd$
820   get_input(wd$)
830 END IF
840 IF num > 80 AND num < 100 THEN
850   LET fs$ = "quatre-vingt-"
860   LET temp_num = num - 80
870   LET sd$ = word$(temp_num)
880   LET wd$ = fs$ & sd$
890   get_input(wd$)
900 END IF
910 END DEFine
920 :

```

FRENCH NUMBERS

by Stewart Granger

```

930 DEFine PROCedure get_input(wd$)
940 AT #4,0,1:PRINT #4,"Enter the French word for the above"
950 AT #4,1,0:PRINT #4," number and press <Enter> (or press A "
960 AT #4,2,0: PRINT #4,"<Enter> for the answer)"
970 AT #4,3,0:INPUT #4,a$
980 REMark these next lines are to deal with
990 REMark a rogue space that sometimes gets inserted
1000 IF a$(1) = " " THEN
1010   LET tmp$ = a$(2 TO LEN(a$))
1020   LET a$ = tmp$
1030 END IF
1040 IF a$ = CHR$(65) OR a$ = CHR$(97) THEN
1050   AT #4,4,0:PRINT #4,"The answer is:"
1060   AT #4,5,15:PRINT #4,wd$
1070   make_choice
1080 END IF
1090 IF (a$ == wd$) OR (rnum=1 AND a$ = "une") THEN
1100   AT #4,4,17:PRINT #4,"Correct"
1110   make_choice
1120 ELSE
1130   AT #4,5,1:PRINT #4,"Wrong, the correct answer is: "
1140   AT #4,6,15:PRINT #4,wd$
1150   make_choice
1160 END IF
1170 END DEFine
1180 :
1190 DEFine PROCedure special_cases(n)
1200 IF n = 0 THEN ans$="zéro"
1210 IF n = 21 THEN ans$ = "vingt et un"
1220 IF n = 30 THEN ans$ = "trente"
1230 IF n = 31 THEN ans$ = "trente et un"
1240 IF n = 40 THEN ans$ = "quarante"
1250 IF n = 41 THEN ans$ = "quarante et un"
1260 IF n = 50 THEN ans$ = "cinquante"
1270 IF n = 51 THEN ans$ = "cinquante et un"
1280 IF n = 60 THEN ans$ = "soixante"
1290 IF n = 61 THEN ans$ = "soixante et un"
1300 IF n = 70 THEN ans$ = "soixante-dix"
1310 IF n = 71 THEN ans$ = "soixante et onze"
1320 IF n = 80 THEN ans$ = "quatre-vingts"
1330 IF n = 90 THEN ans$ = "quatre-vingt-dix"
1340 IF n = 100 THEN ans$ = "cent"
1350 get_input(ans$)
1360 END DEFine
1370 :
1380 DEFine PROCedure make_choice
1390 INK #4,2
1400 AT #4,8,1:PRINT #4,"Press <space-bar> for another number"
1410 AT #4,9,1:PRINT #4,"Press <Esc> to quit"
1420 INK #4,0
1430 REPEAT loop
1440   IF KEYROW(1) = 8 THEN
1450     CLOSE #4: CLOSE #7: STOP
1460   ELSE IF KEYROW(1) = 64 THEN
1470     EXIT loop
1480   END IF
1490 END REPEAT loop
1500 get_num
1510 END DEFine make_choice
1520 :
1530 DATA "un","deux","trois","quatre","cinq"
1540 DATA "six","sept","huit","neuf","dix"
1550 DATA "onze","douze","treize","quatorze","quinze"
1560 DATA "seize","dix-sept","dix-huit","dix-neuf","vingt"

```

BATON TWIRLERS

by Phil Johnson

This is a short SuperBasic program, Baton, which bounces a baton or stick around the screen, changing colour and leaving trails of patterns as it goes.

The program originally ran

on a DEC Professional 380 (PDP11). The QL version is the same, except that, if the program is compiled, several batons can be twirled at the same time by simply typing EXEC FLPI_BATON_EXE.

unlike the PDP11, which does not allow tasks with identical names to run at the same time.

The program itself is very simple. The baton is generated by drawing a straight line between two points bouncing around inside an enclosed

area. The co-ordinates are saved so that after 50 batons the 'tail' of the pattern can be erased by drawing a baton in black ink.

The rest of the program is concerned with the eight conditions of collision between the baton and the boundary.

```

100 REMark *** Baton Twirler
110 REMark *** Phil Johnson
120 PAPER 0 : CLS
130 DIM ypos1(50) : DIM xpos1(50)
140 DIM ypos2(50) : DIM xpos2(50)
150 xlinc = 1.9 : x2inc = 2.7
160 xlinc = 2.7 : y2inc = 3.1
170 x1pos = 50 : x2pos = 55
180 y1pos = 55 : y2pos = 60
190 xmax = 150
200 ymax = 100
210 index = 0
220 REPEAT loop
230 index1 = ( index ) MOD 50
240 index = (index + 1) MOD 100
250 INK (2+(index MOD 6))
260 LINE (x1pos), (y1pos) TO (x2pos), (y2pos)
270 xpos1(index1)=x1pos : xpos2(index1)=x2pos
280 ypos1(index1)=y1pos : ypos2(index1)=y2pos
290 x1pos = x1pos + xlinc
300 y1pos = y1pos + y1inc
310 x2pos = x2pos + x2inc
320 y2pos = y2pos + y2inc
330 IF x1pos < 0 THEN

```

```

340     xlinc = -xlinc : x1pos = 0
350 END IF
360 IF y1pos < 0 THEN
370     y1pos = 0
390     y1inc = - y1inc
400 END IF
410 IF x1pos > xmax THEN
420     x1pos = xmax
430     xlinc = - xlinc
440 END IF
450 If y1pos > ymax THEN
460     y1pos = ymax
470     y1inc = - y1inc
480 END IF
490 IF x2pos < 0 THEN
500     x2pos = 0
510     x2inc = - x2inc
520 END IF
530 IF x2pos > xmax THEN
540     x2pos = xmax
550     x2inc = - x2inc
560 END IF
570 IF y2pos < 0 THEN
580     y2pos = 0
590     y2inc = - y2inc
600 END IF
610 IF y2pos > ymax THEN
620     y2pos = ymax
630     y2inc = - y2inc
640 END IF
650 index2 = ( index - 45 ) MOD 50
660 INK 0
670 LINE(xpos1(index2)), (ypos1(index2))
    TO (xpos2(index2)), (ypos2(index2))
680 END REPEAT loop

```

From Page 39

```

242 IF ty(0) : ty=0
243 IF ty(9) : ty=9
244 t1=(10*ty+t1)+3
245 CLS #t : PRINT #t1,'X' : t=t1
246 BEEP 500,1
247 FOR m=1 TO max1
248     IF l(m)=t : l(m)=0 : BEEP 5000,1 : RETURN 2
249 END FOR m
250 IF t=d : RETURN 0
251 END FOR n
252 RETURN 1
253 END DEFINE
254 :
255 DEFINE FUNCTION end_of_game
256 LOCAL loop,n,m,a,a*(10)
257 BEEP 0,1,100,6000,0,0,0,9
258 FOR n=3 TO 102 : CLOSE #n
259 WINDOW 512,256,0,0
260 FOR n=5 TO 95 STEP 5 : BORDER n,0
261 WINDOW 448,200,32,16
262 PAPER 1 : CLS : INK 7 : CSIZE 3,1
263 IF z>zm(10)
264     zm(10)=z
265     PRINT'You got ',zm(10),' Points'
266     PRINT'Please enter your name!'
267     INPUT b$(10)
268     IF b$(10)='' : b$(10)='Unknown'
269     FOR n=9 TO 0 STEP -1
270         FOR m=0 TO n
271             IF zm(m+1)=zm(m)
272                 a=zm(m+1) : zm(m+1)=zm(m) : zm(m)=a
273                 a*=b$(m+1) : b$(m+1)=b$(m) : b$(m)=a$
274             END IF
275         END FOR m
276     END FOR n
277 END IF
278 CLS : CSIZE 2,0 : PRINT'H I G H S C O R E'
279 FOR n=0 TO 9
280     IF n=9 : PRINT n+1;' ' : ELSE PRINT' ',n+1;' '
281     PRINT b$(n); TO 15;zm(n)
282 END FOR n
283 CSIZE 3,1 : PRINT'again (y \ n)'
284 REPEAT loop
285     a$=INKEY$(-1) : IF a$='' : NEXT loop

```

```

286 IF a$ INSTR 'JY' OR a$=CHR$(10) : BEEP : RETURN 1
287 IF a$ INSTR 'N' : BEEP : RETURN 0
288 END REPEAT loop
289 END DEFINE
290 :
291 DEFINE PROCEDURE read_highscore
292 LOCAL loop,a,test$
293 DIM zm(10),b$(10,10)
294 file$='tiger_dat'
295 OPEN_NEW#3,dev$&'xyxyxy' : DIR #3,dev$ : CLOSE#3
296 OPEN_IN#3,dev$&'xyxyxy' : a=0
297 REPEAT loop
298     IF EOF(#3) : EXIT loop
299     INPUT#3,test$ : IF test$=file$ : a=1 : EXIT loop
300 END REPEAT loop
301 CLOSE#3 : DELETE dev$&'xyxyxy'
302 IF a=1
303     dev$=dev$&file$
304     OPEN_IN#3,dev$
305     FOR a=0 TO 10 : INPUT #3,b$(a),zm(a)
306     CLOSE#3
307 ELSE
308     FOR a=0 TO 10 : b$(a)=' ' : zm(a)=0
309     END IF
310 END DEFINE
311 :
312 DEFINE PROCEDURE write_highscore
313 LOCAL a
314 IF zm(0)=0 : RETURN
315 IF LEN(dev$)>5
316     DELETE dev$
317 ELSE
318     dev$=dev$&file$
319     END IF
320 OPEN_NEW#3,dev$
321 FOR a=0 TO 10 : PRINT#3,b$(a)\zm(a)
322 CLOSE#3
323 END DEFINE
324 :
325 DEFINE PROCEDURE restore_window
326 WINDOW 512,206,0,0
327 PAPER 2 : CLS : CSIZE 0,0
328 CLS#0
329 END DEFINE

```

THE PRINTER REPORT

QL World follows up last year's Printer Reports with three newer models.

STAR XB24-10

The Star XB24-10 dot matrix printer has been on the U.K. market for a few months. It has a comprehensive specification which includes IBM and Epson emulation, multiple letter quality fonts, numerous graphics modes, shadow and outline printing, in any font, rapid draft-quality printing, clever paper-handling and the ability to print in eight colours.

Those features place it near the top of the dot matrix market in terms of functionality; it was judged to be the best printer



in its class in a recent survey of every major printer on the U.K. market but, because of the falling prices of printers, a machine as competent as this is perhaps more affordable than many people think.

Soon after the launch of the Sinclair QL the considered opinion of a wide cross-section of the market was that the ideal printer for it was the Canon PW1080A or its identical twin, the Taxan/Kaga KP810. Rugged, noisy and supremely dependable, they offered simple Epson compatibility and a creditable NLQ printing mode. With an optional RS232 interface or the standard Centronics connection the printer was easy enough to hook to the QL, printer drivers for it have been included with every relevant piece of QL software and its abilities were expanded manifold by devices such as the CuePrint multi-font upgrade.

My Brother M1009 dot matrix printer, retained as insurance against the possibility of a breakdown by the Taxan, gathered dust for years before I lent it to a relative. Taxans are almost indestructible and that ruggedness has ensured that it has survived into the age of a new generation of much more powerful printers. In my office at least it is now the turn of the Taxan to act as back-up.

Star Micronics burst on to the personal computer scene some years ago with its LC-10 printers which combined advanced features such as paper parking and colour ribbons with very reasonable prices. The latest and most powerful addition to the now much-expanded range is the XB24-10 and its wide carriage cousin, the XB24-15.

At 2ft. wide and with a premium of £200

over the base model the XB24-15 was too big for my office and for my pocket and so this review concentrates on the XB24-10, which costs less than £600 in its standard configuration. How much less than £600 it will cost depends on the discounts offered by your supplier.

The XB24-10 measures roughly 18in. wide by 14in. deep and it is some 6in. high. With a rounded appearance, it has the most informative control panel I have seen on any dot matrix printer. Continuous stationery travels from the rear undersome plastic decking which hides the pin-feed mechanism. The decking can be difficult to remove but with the paper parking facility it is rarely necessary to delve in that area.

Parking

Paper parking is a clever but simple idea. On a command from the front panel the continuous stationery is reversed off the platen on to the tractors, which are then disconnected from the drive mechanism. Cut sheets can be inserted by hand or accepted from the cut sheet feeder until, at the touch of a lever, the fanfold paper is again wound on to the platen from its hiding place.

Cut sheets are inserted through plastic guides which ensure that the pages are aligned precisely. The guides have a tendency to move when loading sheets, which can result in misaligned paper, but gentle handling avoids this difficulty. All paper management operations are carried-out using the six front panel switches; the platen knob is almost redundant. Star is

SINCLAIR QL WORLD PRINTER DEMO
The Quick Brown Fox Jumps Over Lazy Dogs
123 456 7890 ?!@ #\$\$ %&* += \ } [] () <

Courier

SINCLAIR QL WORLD PRINTER DEMO
The Quick Brown Fox Jumps Over Lazy Dogs
123 456 7890 ?!@ #\$\$ %&* += \ } [] () <

Script

SINCLAIR QL WORLD PRINTER DEMO
The Quick Brown Fox Jumps Over Lazy Dogs
123 456 7890 ?!@ #\$\$ %&* += \ } [] () <

ORATOR

SINCLAIR QL WORLD PRINTER DEMO
THE QUICK BROWN FOX JUMPS OVER LAZY DOGS
123 456 7890 ?!@ #\$\$ %&* += \ } [] () <

Cinema

SINCLAIR QL WORLD PRINTER DEMO
The Quick Brown Fox Jumps Over Lazy Dogs
123 456 7890 ?!@ #\$\$ %&* += \ } [] () <

Blippo

SINCLAIR QL WORLD PRINTER DEMO
The Quick Brown Fox Jumps Over Lazy Dogs
123 456 7890 ?!@ #\$\$ %&* += \ } [] () <



OUTLINE

SINCLAIR QL WORLD PRINTER DEMO
The Quick Brown Fox Jumps Over Lazy Dogs
123 456 7890 ?!@ #\$\$ %&* += \ } [] () <

RT 1990

apparently more confident that the lever controlling the roller bar can be dispensed with but I found on several occasions that the printer confused itself as to whether the bar should be lifted off the paper or applied firmly to it, sometimes with unfortunate results.

The ribbon cartridges are of the kind which travel with the print sliding up and down the printhead compartment. To use colour ribbons it is necessary to fit a small cog-packed kludge underneath the cartridge housing. Fitting is quick and simple but the kludge must be removed if the printer is to be moved any distance. It is easy to fit new ribbons and to set the eight dip switches located beneath a small lid at the bottom of the printhead compartment.

Establishing the default settings is a remarkably simple exercise because the operation is menu-driven and the settings are stored in a reusable Eprom. By pressing three of the panel buttons on power-up the printer enters what Star calls the Memory Switch mode. The user is then guided through a hierarchy of menus printed on a sheet of paper.

As each set of options is printed the paper is scrolled up so that the line can be read. Choices are made by positioning the printhead beneath the desired option and pressing the "ENTER" button. The prin-

ter then retracts the paper, places an asterisk against the chosen option and prints the next part of the menu. The result is no paper wastage and little room for error or uncertainty.

Many of the settings stored in this way can be over-ridden from the control panel or by control codes passed from the host computer. Eleven of the resident printer fonts can be selected at the press of a key and they can each be printed in any of seven pitches. Over-zealous printer drivers can be outsmarted by using the Panel Lock option at power-up. Panel Locks inhibit the control codes used to select font styles, printing mode and character size, so that anything selected from the front panel remains in force when the document is printed.

The control panel paper management options allow paper to be fed in, micro-adjusted and, if necessary, parked under the rear decking. Fanfold paper can be partly ejected at the end of a document so that the perforation at the bottom of the page is accessible. When the printer is next placed on-line the paper scrolls back to where it should be for printing to start on the next document. The printer cannot normally be placed on-line without paper present.

An unusual facility allows the printer to be placed in "quiet" mode while it is printing. The XB24 is not noisy even at full speed and the consequence of selecting the quiet mode is that it slows somewhat. If the printer is being used at home late at night or if a telephone rings at the beginning of a marathon printing session the quiet mode might be just what is required.

The quality of the output from the XB24-10 can be judged from the dumps accompanying this review. The resident fonts all operate in letter quality mode and two of them have a super letter quality mode where the printer makes two passes

to produce a 48×35 matrix for each character. Fonts include traditional faces such as Times Roman, Times Light, Courier and Prestige, an attractive script for personal letters, two fonts for optical character reading, bar codes, the Greek alphabet, Helvetica and Optimo fonts found more normally in printed documents, and novelty fonts such as Orator, Letter Gothic, Cinema and Blippo. Draft mode has its own simple font.

In letter quality mode any of the fonts can be printed in shadow, outline or shadowed-and-outlined modes, as well as in the more prosaic italic, underline, bold and condensed settings. Most of the fonts include standard IBM graphics which can be accessed even when the printer is emulating the Epson range. Text can be printed in double or quadruple height and in double, triple or quadruple width. Part of the generous 27K internal RAM can be occupied by fonts downloaded from the QL. Font definition is straightforward enough for non-programmers to be able to attempt it with some confidence.

Some minor disappointments are worth mentioning. Even though the XB24-10 can take A4 sheets in landscape format the printer refuses stubbornly to print beyond the 80-column margins. It also has a noisy fan which cannot be switched off between printing sessions except by re-setting the printer from the control panel. The printhead is adjustable so that paper of various widths can be accommodated but the adjustment must be exact to achieve the darkest print.

For small businesses and the high-use home enthusiast the Star Professional range is well worth a close examination. The purchase price includes one year's on-site warranty and the accessories available consist of the colour conversion kit, an automatic cut-sheet feeder, an RS232 interface, a 32KB RAM card and a selection of font Eproms. For value the Star range is difficult to beat.

Mike Lloyd



NEC P2200

Owning an Epson MX80FT2 printer, which I bought for slightly less than £500 when they first appeared, I was becoming increasingly envious of the results being achieved by more modern machines. For about a year I was thinking about a new printer and bought a Citizen 120D which I returned as unsatisfactory, as it would not run with my Sorcerer, a 48K ROM, 16K RAM Z-80 machine of late 1970s vintage.

I tend to buy on value rather than price and I like a product to last a number of years. I even considered a laser printer but decided against it as a dot matrix is much more versatile and one-third of the price. Does a laser printer give three times the value of a dot matrix? The 24-pin NEC P2200 was considered to be a possibility

for some time and I toyed with the idea of a second-hand one offered at £234 by Once Bytten, 59 Swanley Road, Welling, Kent DA16 1LL. I let it pass but two months later wrote to ask if one was available.

I was surprised there was one, claimed to be a nearly new ex-demonstration machine. I ordered it and it arrived two days later by parcel post, with mains lead and manual. If I had not been told it was ex-demonstration it would have passed for new, apart from signs of use on the ribbon.

Most of the swearing resulted from the adaptation of the word processor I use — a distant grandparent of *WordStar*, running on the Sorcerer — to run with it. Getting the NEC P2200 to work on the Sorcerer was a problem, as apparently the timings on the Epson were different from later printers, making it the only one which would run on the Sorcerer without electronic work.

As, unlike Quill, there is a full disassembly of the Sorcerer word processor, it is possible for the user to adapt the machine code and my version is now so customised that it is strikingly different from the original in many respects. The advantage is that I am not limited by the number of translates in Quill. I considered getting *text*⁸⁷ but I bought the P2200 and converted the Sorcerer, so I will stay with that now.

My use of the QL relates to SuperBasic, Archive, and Abacus. Conversion of those programs is relatively easy, so long as you remember the CHR(0)s required by Archive and that they concatenate with + and not 9, as does SuperBasic.

Proportional

It almost goes without saying that the typefaces in the P2200 are superb, especially the proportional spacing. The double height and double and triple width are also very good for headings and notices. There are no DIP switches to set up the printer. Instead, a set-up procedure is run through using the front panel switches and questions and answers on a sheet of paper printed by the machine. Most of the settings, e.g., the choice of typeface at switch-on, depend on the owner's requirements. For the QL I found that auto line feed should be off and auto carriage return should be one.

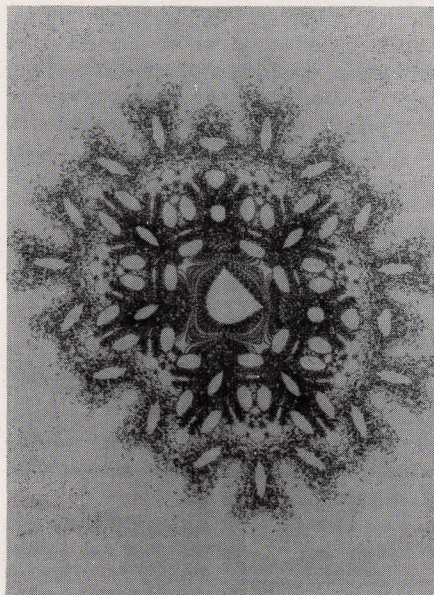
The ribbon cartridges in the NEC P2200 are of interesting construction. In the Epson and many similar machines a very long ribbon is used, wound into a concertina shape inside a box the full width of the printer. The P2200 has a small cassette but the ribbon does not wear out very fast.

I took one to pieces and found that there is a reservoir of ink in a sponge which rubs off into a toothed roller which re-inks the ribbon. It is simple to re-ink the sponge by opening the cassette and then opening the box in which the sponge is kept. The latter is glued in some cases, so obviously you are not meant to do it. I

```

100 REMARK Sinclair QL World HEXLOADER
110 REMARK by Marcus Jeffery and Simon N. Goodwin
120 :
130 CLS
140 RESTORE
150 READ space
160 start = RESPR(space)
170 PRINT "Loading Hex ...":hex_load start
180 DEFine FuNction decimal(x)
190 REMARK
200 RETURN CODE(h$(x))-48-7*(h$(x)>9*)
210 END DEFine decimal
220 :
230 DEFine PROCEDURE hex_load(start)
240 byte=0 : checksum=0
250 REPEAT read_string
260 READ h$
270 IF h$="" THEN EXIT read_string
280 IF LEN(h$)>>2*INT(LEN(h$)/2) THEN
290 PRINT "Odd number of digits in ";h$
300 STOP
310 END IF
320 FOR b=1 TO LEN(h$) STEP 2
330 hb=decimal(b):lb=decimal(b+1)
340 IF hb<0 OR hb>15 OR lb<0 OR lb>15 THEN
350 PRINT "Illegal hex digit in ";h$
360 STOP
370 END IF
380 POKE start+byte,16*hb+lb
390 checksum=checksum+16*hb+lb
400 byte=byte+1
410 END FOR b
420 END REPEAT read_string
430 READ check
440 IF check<>checksum THEN
450 PRINT "Checksum incorrect. Recheck data."
460 STOP
470 ELSE
480 PRINT "Checksum is correct."
490 PRINT "Data entered at ";start;"Length ";space
500 SBVTES flp1_plot2880_prs,start,space
510 SBVTES flp2_plot2880_prs,start,space
520 END IF
530 END DEFine hex_load
1000 DATA 448
1010 DATA "B6BC00000016700","0120B6C00000002"
1020 DATA "6700190228C000","05A0D4B000005F"
1030 DATA "2601E38B681E48B","B6BC0000B046E00"
1040 DATA "009CB4BC00000B04","6E00092E28C0000"
1050 DATA "00006D00008884BC","000000026D00007E"
1060 DATA "6100007BE589E58A","82FC002D84FC002D"
1070 DATA "C2BC000001FFC4BC","00000FF2001E389"
1080 DATA "D280E489E3493801","3A0248C5E44C0284"
1090 DATA "0000007E207C0002","0000DC4EF4DD0C5"
1100 DATA "3810C27C0006E37C","EC4C360402430003"
1110 DATA "E84C02440004D644","0643000102430007"
1120 DATA "ED4B803EFAC0244","80000243000C8644"
1130 DATA "343C7F3E27BE27A","C550875042804E75"
1140 DATA "48E7600B2BC0000","0B406E000046E28A"
1150 DATA "2601E389D2832602","86FC00182803C6BC"
1160 DATA "0000FFFC6FC21C0C","D2834844C8BC0003"
1170 DATA "00FF68CD2842609","D2832641260A868B"
1180 DATA "6D00010C4BC0000","0007163C00079602"
1190 DATA "07D34CDF00064E75","2A4972FF760241FA"
1200 DATA "008070014E4243C","0000000476FF43FA"
1210 DATA "007C70074E43280C","08BC00021C0888A"
1220 DATA "6E0000E343C0000","000076FF43FA058"
1230 DATA "70074E43243C0000","21C076FF224D2809"
1240 DATA "D8BC000021C02444","70074E43243C0000"
1250 DATA "000176FF43FA0035","70074E436000FFB8"
1260 DATA "4E170024E4272F","760070054E414280"
1270 DATA "4E752802C02609","86A00000FF34E75"
1280 DATA "00045041525F1B2A","2840B0A1C333000A"
1290 DATA "*,*,38448

```



```

100 LET line_width=2880/8
110 LET no_of_lines=1440
120 LET print_space=line_width*(no_of_lines)
130 LET ps=RESPR(print_space)
140 LET pe=ps-print_space
150 LET plot=RESPR(512):lo
160 :
170 DEFine PROCEDURE lo
180 REMARK
190 OPEN #3, con 512x256a0x0
200 BYTES FLP1_plot2880_prs,plot
210 END DEFine
220 :
230 DEFine PROCEDURE te
240 REMARK
250 iterate
260 END DEFine
270 :
280 DEFine PROCEDURE SA
290 REMARK
300 SAVE_0 flp1_boot
310 SAVE_0 flp2_boot
320 END DEFine
330 :
340 DEFine PROCEDURE iterate
350 REMARK
360 MODE 8
370 clear_printer ram
380 LET x=0 : y=0
390 LET a=28: b=4: c=48
400 REPEAT iteration_loop
410 LET xx=y*-sign(x)*(ABS(b*x-c))-.5:y=a-x:x=xx
420 CALL plot,(x-5)*30,(y-20)*30,0,0,0,0,0,ps,pe
430 IF KEYROW(2)=2 THEN DUMP
440 IF KEYROW(1)=1 THEN MODE 4:RETURN
450 END REPEAT iteration_loop
460 END DEFine
470 :
480 DEFine PROCEDURE dump
490 REMARK
500 CALL plot,0,0,1,0,0,0,0,ps,pe
510 END DEFine
520 :
530 DEFine PROCEDURE clear_printer ram
540 REMARK
550 CALL plot,0,0,2,0,0,0,0,ps,pe
560 END DEFine
570 :
580 DEFine FuNction sign(x)
590 REMARK
600 IF x<0 :RETURN -1
610 RETURN x>0
620 END DEFine sign
630 :

```

have found stamp-pad ink is satisfactory, but one has to be careful it does not smudge. I shall also try using a ribbon refresher spray on the sponge; that is said to do 20 ribbons for £8.

One problem is that I have found no way to empty the printer buffer if it is full of rubbish. If I send a print command I regret that I cannot go back on it except by switching the printer off and on again. That can corrupt the computer unless the printer data plug is first pulled out. A buffer empty or re-set switch would be very useful.

As readers of *QL World* will know, I am interested in fractals, and a reasonable screen dump was an obvious priority. A reader of my newsletter *Longevity Report* noticed that I decorated the front cover of that with fractals dumped with the Epson and offered to do one with a commercial dump program. I found the result singularly unimpressive, so I decided to write my own for the P2200. Its absolute display is 360 dpi, 60 more than some laser printers. Just dumping the QL screen seemed pointless — several kilobytes pointless really.

The fact that some acquaintances were planning to emigrate to New Zealand gave me an idea. Why not turn the normal process upside down — produce a high-resolution dump and display a low resolution version on screen?

The appended listing does that. A RAM area representing 2,880 × 2,880 bits is set aside and plotted on, with points echoed to the screen. As the screen can give colour but the printer cannot, a feature is added so that if a screen pixel is addressed more than once the colour is increased by one each time. If the screen colour reaches white it is re-set to black and the count continued.

The routine is called with D1 and D2 being x and y, A1 pointing to the start of the printer RAM and A2 the end of printer RAM. Printer RAM is defined by a Basic RESPR before the routine is first called. D3 is a switch. If it is set to 1, the routine dumps the screen; if it is set to 2 it

clears the dump RAM. Otherwise the point D1,D2 is plotted. If it is plotted on-screen the co-ordinates are first divided down. As the dump to paper is square there is an area to the right of the rectangular screen which does not appear on the paper. Originally I did not plot on that part of the screen but changed it because I could see no real reason not to do so.

The screen plot routine is designed to work in mode 8 and the centre of the square display situated to the left side of the CRT screen is 0,0. Printout is to a grid of 2,880 dots horizontally by 1,440 vertically and both screen and printer displays are corrected by the program so that circles are round.

The SuperBasic listing is a fractal program based on an algorithm by Dr Barry Martin of Aston University, Birmingham. I call it *Birthdays* because one can enter in a birthdate, e.g., 28,04,44, as a,b,c and get a pattern from it. One could imagine stalls at fairs giving printouts and possibly "learned" discourses on the future of a subject by counting the number of various shapes in the pattern. Would that be called fractology? This is just an example of the use of the plotting routine and any program giving co-ordinates can be used.

Many such programs can be found in *Fractal Report*, the subscription for which is £10 for six issues; sample copy is free. Issues -1 (flyer), 0 (free introductory issue) and 1 are in print, with issue 2 being due in July. All subscriptions are backdated to volume start. Obtain it from RTL, West Towan House, Porthtowan, Cornwall TR4 8AX. A blank Microdrive and £2 to that address will also get you a copy of the program, including a file containing the source code. Remember that you need full 640K memory expansion to run it.

John de Rivaz

Canon PW-1080A

Anyone who uses a dependable product for any length of time is likely to recommend it to friends. That is my feeling about the versatile Canon PW-1080A printer. Released as a badged version of the Taxan-Kaga, like the Centronics and several other well-known brands, the Canon has proved its reliability, provides most of the features I need from a printer and is in the upper middle league in character output.

Although claims are made for a printing speed of 160cps in draft mode and about 30cps in NLQ, because of the Japanese testing criteria, in practice actual speed is slightly slower.

Since the Canon is compatible with the Epson FX80, virtually the industry standard, the Canon is in the mainstream of printer control code standards and will

work with the majority of programs designed to interface the QL with printers.

Connection of the QL to the Canon is made to its 36-way parallel Centronics port, and if you are to print via one of the QL serial ports you will also need a separate adaptor, such as the Miracle serial-to-parallel converter.

Four switches control all of the Canon's manually-operated functions - power off/on, form feed, line feed and on-line. Additional functions are available if one of the buttons is pressed when the printer is first switched on. Pressing FF (form feed) puts it into NLQ mode and pressing LF (line feed) performs a self-test. If you press both FF and LF switches when powering the printer, output will be a hexadecimal dump of the document or listing.

Three LEDs indicate printer status - On-Line, Alarm and Ready. The Canon accommodates three paper types - tractor-feed with adjustable width, roll paper or single sheets.

One of the most useful features of the majority of dot matrix printers which many new users often do not readily appreciate is that this type of printer is independently-programmable to provide a wide range of special hard copy features.

The Canon includes provision for a variety of type styles and a choice of special character sets associated with nine countries. My Canon is set up to default to Elite mode - to produce neat copy - and the American character set, so that it will print "#" for program listings.

Line feed spacing between rows may be set to 1/8in., 7/72in., 1/6in. or n/216in. The latter option provides a means to increment precision line feed for special applications. My Quill printer driver is set up to allow me to switch between the standard 1/6in. and the finer 30/216in. for use in tabular data for reports.

Enhancing its flexibility further, the Canon also includes several graphics modes for single, double, double-speed double and quad-density printing. Printing may be done in either normal line feed or, if you are using cut sheets, by reversing the direction of paper feed.

The best way to set up your printer will depend largely on what you want to do with it on a regular basis. One-off printing applications from SuperBasic can be done by sending control codes to the printer with a command sequence like:

```
OPEN#3.ser1 : PRINT#3.chr$(27). . .
```

and whatever codes are needed.

Changing typefaces or emphasis from within programs such as the *Spy* or *The Editor*, can be done with a small SuperBasic program or by inserting control codes in a document at appropriate places.

If you are using bi-directional printing you should keep in mind that the Canon has priorities for its control codes. If an

ESC,"@" is encountered on a line with other control codes and the Canon is printing from right to left, the re-set code will take priority over any other codes encountered.

Another condition governed by priority is that the Canon will not print some typefaces in Elite mode. To use Condensed the Canon must first be set to Pica typeface and then to Condensed.

By setting the three DIP switches mounted on the Canon printed circuit board to either off or on you can define the default characteristics of the printer, available when it is switched on.

The top cover must be removed to access these switches but, since most of the functions served by the switch settings can also be controlled from software - i.e., by the computer - this is no great hardship.

Paper length - 11in. or 12in.

Paper end detect - on/off.

Print mode - one of 10 options including elite, pica, expanded, condensed, bold or enlarged.

Italic character set - on/off.

Perforation skip - on/off.

Continuous or sheet feed.

Zero character format - "0" or "O".

NLQ or draft modes.

One of the DIP switches allows you to select either a 2K print buffer or a programmable character generator; PCG, used for defining characters, such as the pi symbol, is not included in the Canon font set. The print buffer will store about 400 words, freeing the QL from a printing job faster; a PCG is used by some programs for sideways printing.

Documents may be printed either directly from SuperBasic, from a file or from within a text editor. A SuperBasic program can be used to format a document in terms of typefaces, margins, horizontal and vertical tab formatting. If you are using a variety of typefaces and styles in a single text editor document, it is usually most convenient to use one of several printer drivers available for the job.

Unlike many dedicated word processors, Quill can print a document from memory; many WPs on other machines print documents from a file. Quill also uses its own printer driver with which you can define up to 10 translate functions for special applications. Because of the varied work my Canon does, my Quill driver is set up as follows:

Preamble: ESC,"@ (Printer re-set (to Elite))

Postamble: None

Emphasise on: ESC,"G (Double strike on)

Emphasise off: ESC,"H (Double strike off)

Underline on: ESC,"-1

Underline off: ESC,"-0

Subscript on: ESC,"4 (Italics on)

Subscript off: ESC,"5 (Italics off)

Typefaces available from within QUILL

Using QUILL's imbedded printer codes:

Default ELITE typeface.

BOLD Elite (double strike).

ITALICS mode.

ITALICS and BOLD (Italics and double strike).

CONDENSED (switches to PICA, first).

BOLD CONDENSED.

QUILL's translated characters:

° - Degree sign.

é - Accented "e".

£ - From UK character set.

Visible printer codes and Quill's translate functions:

Elite and **Condensed Superscript**

Elite and **Condensed Subscript**

Elite, followed by **EXPANDED**

Elite, followed by **BOLD EXPANDED**

Typefaces in combination:

Elite, Expanded, Condensed sub/superscript:

150^{36/216}" = 150^{1/6}"

Superscript on: ESC,"P,ESC,SI (Pica and Condensed on)

Superscript off: ESC,DC2,ESC,"M (Pica and Condensed off)

Translate 1: £,ACK Switch to U.K. char set to print "£"

Translate 2: Subscript and condensed on

Translate 3: Superscript and condensed on

Translate 4: Sub-/Superscript and condensed off

Translate 5: Pica, Expanded and bold on

Translate 6: Pica, Expanded and bold off

Translate 7: Switch to French char set to print "°"

Translate 8: Switch to French char set to print "é"

Translate 9: "▲,ESC,"3,30 (30/216in. Line feed)

Translate 10: "▼,ESC,"2 (1/6in. Line feed)

A technique which can be used to make more translate functions available is to use a single translate to re-set your printer with ESC,"@" to its switch-on state rather than using translates in pairs.

With regard to translates 1, 7 and 8, the function includes commands to switch the printer back to its original mode after printing the character.

Since my Canon DIP switch is set to the American language mode, using translate facilities, such as seven and eight, require the following input in INSTALL__bas:

Translate 7: "°,ESC,"R,1,"[,ESC,"R,0

That is telling the printer that, every time it encounters a degree sign - "°", the QLS <CTRL> <SHIFT> <Z> - it is to switch to the French character set with ESC,"R,1, print "[" (chr\$(91) - the Canon character code - and switch back to the

American character set with ESC,"R,0. The quotes, where indicated, are mandatory and the sequence is case-sensitive; if your manual specifies upper-case, upper-case must be used.

With few exceptions, most typefaces can be used in combination. Translates 2 to 6 and 9 and 10 require control codes to switch modes and are visible on screen. The codes also occupy line space in a document and right-justified documents may need to have the right margins for lines including control codes adjusted to maintain the right margin.

Text editors can incorporate control codes but they are not embedded - they are visible on-screen. If you wish to underline characters in an *Editor* doc, in sequence, you press <ESC><-><1> before the first character and <ESC><-><0> after the last character. That makes your line appear six characters longer but printed line length will be only the characters enclosed within the printer codes.

The Editor uses a separate printer driver program which will accommodate a pure text file produced by any text editor. Its main advantage is that driver files may be built for virtually every type of printer and any number of translate functions may be defined. A similar program is available from PDQL for printing graphics files. One of the principal advantages of this type of printer driver is that you can use all the characters which both the QL and the Canon include in their font sets.

When it was released, Canon offered the option of several NLQ character Eprom sets. They were installed in the empty IC socket on the Canon PCB. For some reason, they quickly became very difficult to obtain. Because of the excep-

tionally high quality output of the Canon, D.A. Burrige's *CuePrint* system was developed for this printer. The CuePrint kit consists of a 64K RAM chip which is installed in the Canon Eprom socket and several software routines, including 13 NLQ fonts and a particularly good font editor.

CuePrint can be used in one of two ways. Copying one of the fonts to the Canon with the COPY__N command will enable you to print documents with a single NLQ font. Alternatively, you can prepare a Quill document incorporating a wide range of CuePrint control codes for fonts, mathematical symbols and graphics and use the program system to print it. An almost unlimited range of translate options was also available. Utilising the Canon reverse sheetpaper feed option, CuePrint also includes small routines which allow you to include QL graphics files in Quill documents.

My printer has been in continuous use since I bought it from the now defunct company Printerland in 1985. I have lost track of the number of reams of paper which have passed through it and, besides cleaning it periodically, the only maintenance it has had is the occasional new ribbon.

If I had to fault it on any account I must say that not having NLQ mode in the Elite typeface is a minor nuisance.

The Canon is certainly one of the better graphics printers available and, provided your dump is up to it, the Canon can provide the best hard-copy available from almost any 9-pin printer.

In order of preference, the only three dump routines I ever use with the Canon are the *QRAM* dump - available with both the QJump *QRAM* system and the *Miracle Trump Card*, Care Electronics *Side-winder* and *PDQL GraFix*.

Usually I use a sequence of programs to prepare dumps for publication - the *QKICK* snapshot feature to save a screen, *Eye-Q* to modify the screen so that it is either black or white and to reposition screen detail to improve reproduction legibility and *QRAM*, to dump the screen.

QRAM is usually my first choice because it includes an undocumented feature. When selecting the "Dump Screen" output device you can elect to print a dump to a file as well as the printer. Doing so enables you to copy dump files to the printer with the COPY__N command and the file occupies only 16K disc space.

Because of space limitations for the device name, intended only for ser1, ser2 or par, you have room enough only for a single character file name but you can always re-name the graphics files later.

The newer 24-pin printers produce better output than the Canon but at considerably greater cost. The current range of 24-pin printers starts at something around £275. The Canon PW-1080A has been advertised recently for as low as £160, which makes it extremely good value.

Ron Massey

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QLART

by Bas Arts

QLart is a fairly straightforward program that converts your QL into an "art generator". It uses the inbuilt random generator and graphic routines of your QL to create some abstract drawings on the screen. Just type in this program and run it. You might be fascinated by the results of QLart. Sometimes you might even think your QL has a real understanding of the general principles of creating art.

However, to be honest, this is not always the case. Sometimes your screen will look like a crawly composition of dots and lines. When you have reached that stage, there are several things you can do:

1. Press F1 to clear the whole screen
2. Press F2 to clear a random selected part of the screen.

3. Press F3 to clear the screen and switch between the two display modes of your QL
4. Wait. You will see that after a while the screen has been completely changed because of the execution of the routines

When QLart is running, a status line appears at the bottom of the screen. The green colour of this status line means that your QL has completed a drawing routine and is waiting for input for a while. During these moments you have the

option to select one of the drawing routines yourself by pressing the appropriate number key, as explained in the introduction screen. Alternatively, you can press one of the function keys F1, F2 or F3 or ESCape to quit QLart.

If you don't respond you will see that after a few moments the status line turns red and QLart selects at random a drawing routine on its own.

This program offers you the capability to switch between the two display modes of the

QL by pressing F3. When you do this the screen will be cleared.

The program starts in monitor mode. Because of the chosen window size in QLart it is possible to use this mode when you use a television. I suggest you try out which mode suits you best. My experience is that the monitor mode gives the best results when using a monochrome monitor or black and white television.

It is interesting to try the monitor mode, too, when you use a colour display. The number of different colours still available in this mode may surprise you.

I hope readers will enjoy QLart and will be encouraged to add new routines or alter the existing routines to their own preferences.

```

100 REMark *** QLART - Version 2.1 - 88/9/16 ***
110 CLEAR: RANDOMISE: modus=0: instructions: CLS:
BORDER 1,7
120 REPEAT picture
130   status 4: choice=CODE(INKEY$(200)): status 2
140   IF NOT choice: choice=RND(48 TO 57)
150   SElect ON choice
160     =27: EXIT picture
170     =48: block_pattern
180     =49: characters
190     =50: character_block
200     =51: square
210     =52: triangles
220     =53: ellipses
230     =54: line_pattern
240     =55: recolour
250     =56: arcs
260     =57: lines
270     =232: PAPER 0: CLS
280     =236: CLS RND(1 TO 4)
290     =240: modus=NOT modus: PAPER 0: MODE modus*
8: CSIZE #0,2,0
300   END SElect
310 END REPEAT picture
320 WINDOW #0,448,40,32,216: INK #0,7: WINDOW 448,
200,32,16: BORDER 0: PAPER 2: INK 7: SCALE 100,0,0
: OVER 0: FILL 0: WINDOW #2,448,200,32,16: PAPER #
2,1: MODE 8
330 REMark End of main program
340 DEFINE PROCEDURE instructions
350   WINDOW #0,450,10,31,246: PAPER #0,0: WINDOW
452,232,30,12: PAPER 0: INK 4: WINDOW #2,400,200,5
6,16: PAPER #2,0: MODE 4: CSIZE #0,2,0: SCALE 230,
0,0: CSIZE 2,1: PRINT 'QLART': CSIZE 1,0
360   PRINT'\This program draws "paintings" by mak
ing use of the\'random number generator and graph
ic routines of your QL.\\'During the run of this
program you can use the\'following keys:'
370   PRINT\'1'&CHR$(189)!'Draw characters',',',6'&C
HR$(189)!'Draw line pattern'\2'&CHR$(189)!'Draw c
haracter block',',',7'&CHR$(189)!'Recolour'\3'&CHR$(
189)!'Draw square',',',8'&CHR$(189)!'Draw arcs'\4
'&CHR$(189)!'Draw triangle',',',9'&CHR$(189)!'Draw l
ines'\5'&CHR$(189)!'Draw ellipse',',',0'&CHR$(189)
!'Draw block pattern'
380   PRINT\'F1'&CHR$(189)!'Clear whole screen'\F
2'&CHR$(189)!'Clear random selected part of the sc
reen'\F3'&CHR$(189)!'Change display mode (4/8 col
ours)\\'ESC'&CHR$(189)!'Quit program'\\' Press a
key to start QLART...': PAUSE
390 END DEFINE
400 DEFINE PROCEDURE status(i)
410   AT #0,0,0: INK #0,i: t$='0-9'&CHR$(189)&'Sel
ect F1'&CHR$(189)&'CLS F2'&CHR$(189)&'Clr part F3'
&CHR$(189)&'Mode'
420   FOR x=1 TO LEN(t$): PRINT #0,t$(x);
430 END DEFINE
440 DEFINE PROCEDURE block_pattern
450   CSIZE 2,0: PAPER RND(255): INK RND(255): OVE
R RND(-1 TO 1): y1=RND(20): y2=RND(21-y1)+y1: x1=R
ND(35): x2=RND(36-x1)+x1
460   FOR y=y1 TO y2
470     FOR x=x1 TO x2 STEP RND(1 TO 3): AT y,x: P
RINT ' ';
480   END FOR y
490 END DEFINE
500 DEFINE PROCEDURE characters
510   INK RND(255): OVER 1
520   FOR nr=1 TO RND(1 TO 8): CURSOR RND(5 TO 435
),RND(5 TO 195): CSIZE 2*RND(1),RND(1): PRINT CHR$(
RND(65 TO 90));
530 END DEFINE
540 DEFINE PROCEDURE character_block
550   CSIZE 2,0: PAPER RND(255): INK RND(255): OVE
R RND(-1 TO 1): y1=RND(21): y2=RND(22-y1)+y1: x1=R
ND(35): x2=RND(36-x1): char$=CHR$(RND(11 TO 255))
560   FOR y=y1 TO y2: AT y,x1: PRINT FILL$(char$,x
2);
570 END DEFINE
580 DEFINE PROCEDURE square
590   OVER RND(-1 TO 1): x=RND(1 TO 440): y=RND(1
TO 220): BLOCK x,y,RND(5 TO 445-x),RND(5 TO 225-y)
,RND(255)
600 END DEFINE
610 DEFINE PROCEDURE triangles
620   INK RND(255): OVER RND(-1 TO 1): FILL RND(1)
: size=RND(2 TO 200): x=RND(5 TO 325-size): y=RND(
5 TO 215-size): LINE x,y TO x+size,y TO x+size/2,y
+size TO x,y: FILL 0
630 END DEFINE
640 DEFINE PROCEDURE ellipses
650   INK RND(255): OVER RND(-1 TO 1): FILL RND(1)
: size=RND(1 TO 100): ELLIPSE RND(5+size) TO 325-si
ze),RND(5+size TO 225-size),size,RND(10)/10,RND(6)
: FILL 0
660 END DEFINE
670 DEFINE PROCEDURE line_pattern
680   INK RND(255): OVER RND(-1 TO 1): FILL RND(1)
: x=RND(55 TO 275): x1=RND(55 TO 275): y=RND(55 TO
175): y1=RND(55 TO 175)
690   FOR nr=2 TO RND(5 TO 50) STEP RND(2 TO 5): L
INE x-nr,y+nr TO x1+nr,y1-nr
700   FILL 0
710 END DEFINE
720 DEFINE PROCEDURE recolour
730   RECOL RND(255),RND(255),RND(255),RND(255),RN
D(255),RND(255),RND(255),RND(255)
740 END DEFINE
750 DEFINE PROCEDURE arcs
760   INK RND(255): OVER RND(-1 TO 1): FILL RND(1)
: LINE RND(5 TO 325),RND(5 TO 215)
770   FOR nr=1 TO RND(1 TO 4): ARC TO RND(5 TO 325
),RND(5 TO 215),RND(6 TO 35)/10
780   FILL 0
790 END DEFINE
800 DEFINE PROCEDURE lines
810   INK RND(255): OVER RND(-1 TO 1): FILL RND(1)
: LINE RND(5 TO 325),RND(5 TO 225)
820   FOR nr=1 TO RND(1 TO 8): LINE TO RND(5 TO 32
5),RND(5 TO 225)
830   FILL 0
840 END DEFINE

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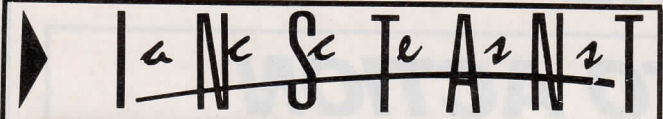
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